<u>Standard No. 10: Curricular Development, Delivery, and Improvement</u>: The college or school's faculty must be responsible for the development, organization, delivery, and improvement of the curriculum. The curriculum must define the expected outcomes and be developed, with attention to sequencing and integration of content and the selection of teaching and learning methods and assessments. All curricular pathways must have both required and elective courses and experiences and must effectively facilitate student development and achievement of the professional competencies.

The curriculum for the professional portion of the degree program must be a minimum of four academic years or the equivalent number of hours or credits. The curriculum must include didactic course work to provide the desired scientific foundation, introductory pharmacy practice experiences (not less than 5% of the curricular length) and advanced pharmacy practice experiences (not less than 25% of the curricular length).[1]

1) **Documentation and Data:**

Use a check ☑ to indicate the information provided by the college or school and used to self-assess this standard:

Required Documentation and Data:

☑ A list of the members of the Curriculum Committee (or equivalent) with details of their position/affiliation to the college or school

☑ A list of the charges or assignments and major accomplishments of the Curriculum Committee in the last academic year. (Appendix 10B Curriculum Review & Revision Matrix)

Required Documentation for On-Site Review:

(None required for this standard)

Data Views and Standardized Tables:

It is optional for the college or school to provide brief comments about each chart or table (see Directions).

☑ AACP Standardized Survey: Faculty – Questions 40 – 46 Appendix 10H

☑ AACP Standardized Survey: Student – Questions 30, 34, 35 Appendix 10H

☑ AACP Standardized Survey: Alumni – Questions 22, 27 Appendix 10H

Optional Documentation and Data:

☑ Other documentation or data that provides supporting evidence of compliance with the standard. Examples could include a curricular overview, the college or school's curricular map, and data that link teaching-and-learning methods with curricular outcomes.

[1] Refer to Standards 13 and 14 and Appendices B and C for additional detail and guidance.

2) **College or School's Self-Assessment:** Use the checklist below to self-assess the program on the requirements of the standard and accompanying guidelines:

	S	N.I.	U
The college or school's faculty is responsible for the development, organization, delivery, and improvement of the curriculum.	●	○	○
The curriculum defines the expected outcomes and is developed with attention to sequencing and integration of content and the selection of teaching and learning methods and assessments.	●	○	○
All curricular pathways have both *required* and *elective* courses and experiences and effectively facilitate student development and achievement of the professional competencies.	●	○	○
The curriculum for the professional portion of the degree program is a minimum of four academic years or the equivalent number of hours or credits.	●	○	○
Introductory pharmacy practice experiences are not less than 5% (300 hours) of the curricular length.	●	○	○
The advanced pharmacy practice experiences are not less than 25% (1440 hours) of the curricular length.	●	○	○
On behalf of the faculty, the Curriculum Committee (or equivalent) manages curricular development, evaluation, and improvement to ensure that the curriculum is consistent with the collective vision of the faculty and administration.	●	○	○
Learning outcomes for curricular courses and pharmacy practice experiences are mapped to the desired competencies and gaps and inappropriate redundancies identified inform curricular revision.	●	○	○
Curricular design allows for students to be challenged with increasing rigor and expectations as they matriculate through the program to achieve the desired competencies. The curriculum design enables students to integrate and apply all competency areas needed for the delivery of holistic patient care.	●	○	○
The Curriculum Committee (or equivalent) is constituted to provide balanced representation from all departments, divisions, and/or disciplines within the college or school.	●	○	○
Faculty members are aware of the content, competencies, and learning outcomes for each other's courses and use that information to optimize these elements within their own courses.	●	○	○
The curriculum complies with university policies and procedures and the accreditation standards.	●	○	○
Student representation and feedback are integral parts of curricular development and improvement.	●	○	○
The Curriculum Committee (or equivalent) has adequate resources to serve as the central body for the management of orderly and systematic reviews of curricular structure, content, process, and outcomes, based on assessment data.	●	○	○

3) **College or School's Comments on the Standard:** The college or school's descriptive text and supporting evidence should specifically address the following. Use a check ☑ to indicate that the topic has been adequately addressed. Use the text box provided to describe: areas of the program that are noteworthy, innovative, or exceed the expectation of the standard; the college or school's self-assessment of its issues and its plans for addressing them, with relevant timelines; findings that highlight areas of concern along with actions or recommendations to address them; and additional actions or strategies to further advance the quality of the program. For plans that have already been initiated to address an issue, the college or school should provide evidence that the plan is working. Wherever possible and applicable, survey data should be broken down by demographic and/or branch/campus/pathway groupings, and comments provided on any notable findings.

☑ A description of the curricular structure, including a description of the elective courses and experiences available to students

☑ How both the didactic and experiential components comply with Standards for core curriculum and IPPE and APPEs in regard to percentage of curricular length

NA Any nontraditional pathway(s) leading to the Doctor of Pharmacy degree (if applicable)

☑ Data that link teaching-and-learning methods with curricular outcomes

☑ How the results of curricular assessments are used to improve the curriculum

☑ How the components and contents of the curriculum are linked to the expected competencies and outcomes through curricular mapping and other techniques and how gaps in competency development or inappropriate redundancies identified inform curricular revision

- ☑ How the curricular design allows for students to be challenged with increasing rigor and expectations as they matriculate through the program to achieve the desired competencies and how the curriculum design enables students to integrate and apply all competency areas needed for the delivery of holistic patient care.
- ☑ How the college or school is applying the guidelines for this standard in order to comply with the intent and expectation of the standard
- ☑ Any other notable achievements, innovations or quality improvements
- ☑ Interpretation of the data from the applicable AACP standardized survey questions, especially notable differences from national or peer group norms

Curricular Structure

The College's curriculum, which is currently in transition, is composed of two to three years (four to six semesters) of pre-pharmacy coursework followed by four years (eight semesters plus three summer terms) of professional pharmacy (Pharm.D.) coursework (Appendix 9C: Pre-pharmacy and Professional Curriculum 2011-2012). The P1 year is focused on foundational basic science principles, pharmaceutics, introduction to patient care practices and prescription practice. In the P2 year, the focus is on pharmacodynamics (medicinal chemistry and pharmacology), over-the-counter products and pharmacy management. The P3 year is focused on pharmacotherapy with organ-system application and integration of pharmacodynamic principles and patient assessment skills. In each of the P1-P3 years, concepts learned in the didactic setting are integrated, reinforced and applied in the TWCP and IPPEs. The curriculum provides a total of 308 hours of IPPEs (greater than 5% of the curriculum) and 1,600 hours (greater than 25% of the curriculum) of APPEs.

Professional electives allow students to pursue professional and personal interests. The professional elective course policy states that students may choose any University course that is 300 level or higher, giving students maximum flexibility to obtain professional elective credit. Several pharmacy professional elective courses (Appendix10A: Pharmacy Professional Elective Course Offerings) are available, as well, and the list has continually expanded over the last five years. As the College has worked to modify the electives course policy and expand elective course offerings, graduating students and alumni have been increasingly satisfied as indicated in the AACP Graduate Student Survey question #34 and AACP Alumni Survey question #27 (Appendix 10H).

In addition to the traditional Pharm.D. program, the College also offers two Pharm.D. dual degree options, Pharm.D./MBA and Pharm.D./Ph.D. Both degrees contain the same pharmacy coursework as the traditional Pharm.D. program and, therefore, contain the same mix of required and elective courses as described above. The MBA coursework can be completed in one calendar year

following completion of the Pharm.D. degree. Alternatively, a student may take MBA courses anytime after gaining admission to the Graduate School and MBA program. The Pharm.D./Ph.D. program is designed to provide an opportunity for outstanding professional students in the pharmacy program to obtain research experience and a Doctor of Philosophy degree in the Department of Pharmaceutical Sciences with an additional 3 years of study. Finally, a proposed dual degree program for Pharm.D./MPH is in development.

Curriculum Committee Charges and Accomplishments

The College bylaws state the Curriculum Committee must consist of at least six faculty members, with two representatives each from the Departments of Pharmacy Practice and Pharmaceutical Sciences, plus one student member from each professional pharmacy class, one student from the pharmacy graduate program and one pharmacy practitioner. The faculty selects Curriculum Committee members annually by voting on a list of nominees; members selected vote to elect the committee chair.

The current Curriculum Committee is composed of 12 members, representing Pharmaceutical Sciences, Pharmacy Practice (including the TWCP faculty and experiential directors), students and pharmacy practitioners (Table 10-1). The position reserved for a fourth-year pharmacy student is currently unfilled due to student time constraints, and the position for the pharmacy graduate program representative is also unfilled, as there were none.

Table 10-1 Curriculum Committee Membership 2011-2012

Member	Affiliation
Cynthia Naughton, Pharm.D., BCPS (CHAIR)	Pharmacy Practice
Rebecca Focken, Pharm.D.	IPPE Director, Pharmacy Practice
Jeanne Frenzel, Pharm.D.	Thrifty White Concept Lab Pharmacy Practice
Bin Guo, Ph.D.	Pharmaceutical Sciences
Michael Kelsch, Pharm.D., BCPS	Pharmacy Practice
Donald Miller, Pharm.D.	Assessment Committee Chair, Pharmacy Practice
Stefan Vetter, Ph.D.	Pharmaceutical Sciences
Amy Werremeyer, Pharm.D., BCPP	Pharmacy Practice
Gayle Ziegler, R.Ph.	Sanford Medical Center
Kit Wong	P1 Pharmacy Student
Sarah Clark	P2 Pharmacy Student
Megan Born	P3 Pharmacy Student
Breanna Schmidt	P3 Pharmacy Student

The Curriculum Committee is charged with managing curricular development, organization, delivery, evaluation and improvement to ensure that the curriculum is consistent with the collective vision of the faculty and administration. The Curriculum Committee serves as the central body for managing the orderly and systematic evaluation of the curricular structure, content, process and outcomes, based on assessment data. Recommendations for changes to the curriculum proposed by the Curriculum Committee are approved by the full Pharm.D. program faculty. The activities and major accomplishments of the Curriculum Committee since the last accreditation visit are documented in Appendix 10B.

As mentioned in Standard 9, the Curriculum Committee developed, and our faculty approved, pharmacy program level ABOs (Appendix 9A) to define the expected curricular outcomes and corresponding competencies of our program. The ABOs are used to guide curriculum development, organization, delivery and improvement. A significant accomplishment of the Curriculum Committee since the last accreditation visit was the evaluation, revision and approval of a new pre-pharmacy and professional curriculum to reflect the College's ABOs and the ACPE accreditation standards. The new curriculum was the result of extensive dialogue with faculty, students, and external constituents over an 18-month period beginning in November 2008. The process began by mapping the curriculum to the ABOs and ACPE Accreditation Standards 2007 Appendix B. The pharmacodynamics series and the pharmacotherapeutics series were also evaluated for relevance using guidelines for pharmacotherapy curricula in family medicine residencies, medical expenditures for diseases and drugs in the U.S., top therapeutic classes of drugs in the U.S., morbidity and mortality data in the U.S. and AHRQ hospitalization data.

Based on this comprehensive evaluation, two major problems were identified: suboptimal integration and gaps in content. Although there was progressive coverage of basic science and practice application as students progressed through the previous curriculum, the integration was less than ideal. For instance, the pathophysiology of diabetes was taught in the first semester of the P1 year, the pharmacodynamics of the pharmacologic agents used in the treatment of diabetes is taught in the fall semester of the P2 year, followed by the therapeutic principles of use of anti-diabetic agents, which was taught in the fall semester of the P3 year. Although the topics flowed from one year to the next, the amount of time elapsed between the pathophysiology, pharmacodynamics, and pharmacotherapeutics was problematic in that students often had to be re-taught previous concepts.

Secondly, when mapped to ACPE Accreditation Standards 2007 Appendix B, the core curriculum revealed content gaps in public health, interprofessional education opportunities, leadership, cultural competency, complementary and alternative medicine, research methods, informatics, women's health and patient safety. The results of the curriculum evaluation may partially explain the relatively lower satisfaction responses from alumni compared to peer schools on AACP Survey question #25 (Appendix 10H). Consequently, the professional curriculum underwent significant revision with special attention to course content, sequencing, integration, and longitudinal learning. Relevant course content was added and unnecessary duplications were eliminated in the new curriculum.

New Professional Curriculum

The proposed curriculum underwent several iterations in 2009-2010 based on feedback received from the committee, faculty, students and external constituents. The new curriculum was approved by the full faculty in August 2010 (Appendix 10C) and will be fully implemented in the 2015-2016 academic year following a transition schedule (Appendix 10D). The new professional curriculum integrates pharmacology (e.g., pharmacodynamics) with application to real patients (e.g., pharmacotherapy) in that students learn the pharmacology of medications in one semester and the therapeutics in the semester immediately following. Several courses were added, including an interprofessional education course in the spring semester of the P2 year which will contain not only pharmacy students, but also nursing and allied health students. The course content includes topics that are common to all health care disciplines – communication, conflict resolution, role and scope of practice, ethics and patient safety.

PSci 417, Pharmacogenomics was added to introduce P2 students to the terminology, testing, application and ethics of this field. Phrm 540, Public Health was added in the fall of the P3 year. In response to conversations and feedback garnered from alumni, the College added Phrm 570, Practice Improvement and Project Management in the spring of the P3 year. This course is designed to help students evaluate both existing and new pharmacy programs/projects under consideration to determine quality and cost effectiveness. Finally, the College added additional content in the areas of peri-operative/surgical care, critical care, women's health, men's health, and complementary and alternative medicine. The new curricular structure will allow the curriculum to be taught at a depth that supports understanding through enhanced emphasis on sequential application of materials.

Courses in the professional curriculum will be re-evaluated on a continuous cycle by a faculty and student group, with each course evaluated every three years according to the Curriculum Evaluation Plan and Course Evaluation Rubric to be described more fully in Standard 15. This ongoing evaluation will ensure that our curriculum is continuously mapped to ACPE Appendix B, and that content in all courses is evaluated for relevance, duplication and potential lack of coverage.

New Pre-Pharmacy Curriculum

The entire pre-pharmacy curriculum was also evaluated for relevance, rigor, and adequate preparation for the professional pharmacy curriculum. Microbiology 460, Pathogenic Microbiology, Biochemistry 460 and 461, and upper division English 324/325 all moved from the professional curriculum into the pre-professional curriculum. The reason for this change was to make room in the professional curriculum for additional coursework either as new courses or increases in credits of existing courses.

In the previous curriculum, students were able to select either Econ 105, Principles of Economics or Econ 201, Microeconomics. In the new curriculum, Econ105 was deleted in favor of Econ 201 due to feedback from Social and Administrative Sciences pharmacy practice faculty teaching Phrm 475, Pharmacy Management. Comm 216, Intercultural Communication and Stats 330, Introductory Statistics were added to the pre-pharmacy curriculum based upon deemed importance to the practice of pharmacy and evidence based medicine. Phys120, Fundamentals of Physics was deleted in favor of Phys 211, College Physics based on student feedback and recommendations from the Department of Pharmaceutical Science.

The total number of credit hours for the pre-pharmacy curriculum increased from 65 to 77 credits as a result of the aforementioned changes. Concerned about lengthening the pre-pharmacy program, the College examined data from students admitted into the professional program during 2007-2009. In that cohort of students, the number of college credits upon admission to NDSU ranged from 2 to 58 with an average of 11.9 (n=257). Courses most frequently transferred into NDSU included English, math, chemistry and biology. Very few students (4.3 percent) were admitted into the professional program after four semesters of pre-pharmacy coursework. Of the remaining students admitted into the professional program, 45.5% were admitted with four to five semesters, 1.2% with five to six semesters, 36.2% with six or more semesters and 12.8% had a bachelor's degree prior to admission to the professional program. Despite the increase in number of credits, pre-pharmacy course requirements in the new curriculum can be completed in four to six

semesters, depending on the number and type of advanced placement or post-secondary education option credits the student has accumulated at the time of enrollment. The new pre-pharmacy curriculum was approved by the full faculty in 2010 and implemented in the fall of 2011 (Appendix 10E and 10F). A one-year transition schedule was designed to accommodate students applying to the professional program in the spring of 2012 for fall 2013 admission (Appendix 10G).

Curricular Design

Coordination and collaboration among faculty across departments is encouraged to achieve an integrated curriculum, although actual participation has been inconsistent in the past. When surveyed in 2008, College faculty reported somewhat low levels of agreement that there is adequate collaboration between disciplines. Efforts to improve coordination and collaboration across disciplines were implemented, including:

1. Discussion of curricular issues at departmental meetings led by the ADA A&A
2. Faculty retreats
3. Interdepartmental meetings between faculty who teach similar content to review and compare one another's curriculum maps

These steps have demonstrated improvement in the faculty's perception of cross-discipline collaboration and the faculty's understanding of how their course content fits into the larger curriculum, as evidenced in the 2011 Faculty Survey (Appendix 10H). Further improvement in these areas is anticipated in future years.

4) **College or School's Final Self-Evaluation:** Self-assess how well the program is in compliance with the standard by putting a check in the appropriate box ☑:

Compliant	Compliant with Monitoring	Partially Compliant	Non Compliant
No factors exist that compromise current compliance; no factors exist that, if not addressed, may compromise future compliance.	• No factors exist that compromise current compliance; factors exist that, if not addressed, may compromise future compliance **/or** • Factors exist that compromise current compliance; an appropriate plan exists to address the factors that compromise compliance; the plan has been fully implemented; sufficient evidence already exists that the plan is addressing the factors and will bring the program into full compliance.	Factors exist that compromise current compliance; an appropriate plan exists to address the factors that compromise compliance and it has been initiated; the plan has not been fully implemented and/or there is not yet sufficient evidence that the plan is addressing the factors and will bring the program into compliance.	• Factors exist that compromise current compliance; an appropriate plan to address the factors that compromise compliance does not exist or has not yet been initiated **/or** • Adequate information was not provided to assess compliance
☐ **Compliant**	☑ **Compliant with Monitoring**	☐ **Partially Compliant**	☐ **Non Compliant**

5) **Recommended Monitoring:** If applicable, briefly describe issues or elements of the standard that may require further monitoring.

Because the curriculum was significantly revised, it will require close monitoring as it is implemented. The new curriculum will be evaluated through PCOA, NAPLEX and MPJE scores, as well as ABO mapping and curricular assessment measures over the next several years.

Appendices

Appendix 9A: Program Level Ability-Based Outcomes

Appendix 9C: Pharm.D. Curriculum 2011-2012

Appendix 10A: Pharmacy Professional Electives

Appendix 10B: Curriculum Review & Revision Matrix

Appendix 10C: New Professional Curriculum

Appendix 10D: New Professional Curriculum Transition Schedule

Appendix 10E: New Pre-Pharmacy Curriculum

Appendix 10F: Pre-Pharmacy Curricular Options

Appendix 10G: Pre-Pharmacy Transition Schedule

Appendix 10H: AACP Survey Data

Doctor of Pharmacy Education
Program-Level Ability-Based Outcomes
North Dakota State University
College of Pharmacy, Nursing, and Allied Sciences

The mission of North Dakota State University College of Pharmacy, Nursing, and Allied Sciences is to **educate students and advance research and professional service**. To achieve this mission, the Pharmacy Doctorate curriculum must:

> "Prepare graduates with the professional competencies to enter pharmacy practice in any setting to ensure optimal medication therapy outcomes and patient safety, satisfy the educational requirements for licensure as a pharmacist, and meet the requirements of the university for the degree"; and
>
> "Develop in graduates, knowledge that meets the criteria of good science; professional skills, attitudes, and values; and the ability to integrate and apply learning to both the present practice of pharmacy and the advancement of the profession. Graduates must be able to identify and implement needed changes in pharmacy practice and health care delivery."
>
> (ACPE Accreditation Standards for the Professional Program in Pharmacy Leading to the Doctor of Pharmacy Degree. 2007. Standard No. 9: The Goal of the Curriculum)

The purpose of this document is to define a minimal set of clear, concise, program-level, ability-based outcomes for the Doctor of Pharmacy education at North Dakota State University College of Pharmacy, Nursing, and Allied Sciences. These outcomes are consistent with current ACPE standards and the American Association of Colleges of Pharmacy Center for the Advancement of Pharmaceutical Education (CAPE) Outcomes as well as other professional standards, guidelines, and codes.

Program-level, Ability-Based Outcomes are explicit statements of what students will be able to do as a result of the integration of knowledge, skills, and attitudes gained by completion of the Doctor of Pharmacy educational experience at North Dakota State University College of Pharmacy, Nursing, and Allied Sciences. They reflect the abilities of the students as a result of completion of the curriculum as a whole, rather than completion of a single course or course sequence. Furthermore, program-level Ability-Based Outcomes provide a basis to evaluate curriculum design and assess student competency.

Global competencies that must be achieved by graduates of the Doctor of Pharmacy curriculum are the abilities to: 1) Provide patient-centered care; 2) Manage and use resources of the health care system to provide, assess, and coordinate safe, accurate, and time-sensitive medication distribution and improve therapeutic outcomes of medication use; and 3) Promote health improvement, wellness, and disease prevention. Working cooperatively with patients, prescribers, and other members of an interdisciplinary team is central to all three global competencies.

The outcomes in this document are written to reflect competencies necessary of a **generalist, entry-level pharmacist**. A generalist, entry-level pharmacist is described as one who provides on-going, comprehensive, and coordinated patient-centered care to patients regardless of age, gender, disease, drug treatment category, or organ system in any practice setting (e.g. community, hospital, long-term care, home care) as an entry-level pharmacist.[1,2] Generalist entry-level pharmacists seek the expertise of specialist practitioners for the resolution of specific, complex drug therapy problems to ensure optimal drug therapy outcomes.[2]

It is important to note that students may achieve these ability-based outcomes with varying levels of competency as they progress through the curriculum. However, by graduation, all students should be able to competently perform the functions described in the outcomes at the level of a generalist, entry-level pharmacist entering pharmacy practice in any setting.

Glossary

Ability: The capacity to do something or perform successfully as a result of integrating knowledge, skills, and attitudes.

Attitude: A state of mind, manner, or disposition to act in a certain way towards an idea, object, person, or situation.

Knowledge: Acquired information necessary to perform the functions of a generalist, entry-level pharmacist.

Outcome: The results associated with instructional experiences

> **Ability-based outcome:** Explicit statement of what students will be able to do as a result of the integration of knowledge, skills, and attitudes gained from their instructional experiences.
>
> **Course-level, ability-based outcome:** The knowledge, skills, and attitudes of students resulting from completion of a single course.
>
> **Program-level, ability-based outcome:** Explicit statements describing what students will be able to do as a result of the integration of knowledge, skills, and attitudes gained by completion of the curriculum as a whole.

Skill: The ability to perform a task, usually gained through experience and training.

References

1. Cipolle RJ, Strand LM, Morley PC. *Pharmaceutical Care Practice: The Clinician's Guide*. 2nd ed. New York, NY: McGraw Hill; 2004.

2. Schwinghammer TL. Defining the generalist pharmacy practitioner. AJPE 2004;68(3):article 76.

ABILITY-BASED EDUCATIONAL OUTCOMES

1. ATTITUDES AND VALUES

Students will integrate, apply, and reinforce professional attitudes and values across the curriculum.

Specific Competencies:

a. Demonstrate honesty and integrity in all situations.
b. Demonstrate sensitivity and tolerance for the values, dignity, and abilities of all individuals.
c. Make decisions and perform duties in accordance with legal, ethical, social, cultural, economic, and professional guidelines.
d. Self-assess learning needs and design, implement, and evaluate strategies to promote intellectual growth and continued professional competence in the areas of patient-centered care, systems management, and public health.

2. COMMUNICATION

Students will communicate in a caring and respectful manner in all situations using appropriate listening, verbal, nonverbal, and written skills.

Specific Competencies:

a. Communicate and collaborate with patients, caregivers, health care professionals, administrative and support personnel to engender a team approach to patient-centered care.
b. Demonstrate effective communication skills in inter-disciplinary relationships to assure safe, efficient, cost-effective utilization of human, physical, medical, informational, and technological resources.

3. SCIENTIFIC FOUNDATION

Students will integrate and apply scientific knowledge of pathophysiology, medicinal chemistry, pharmaceutics, pharmacology, and pharmacokinetics across the curriculum.

Specific Competencies:

a. Use appropriate scientific terminology to convey concepts of pathophysiology, medicinal chemistry, pharmaceutics, pharmacology, and pharmacokinetics.
b. Demonstrate an understanding of scientific research and discovery.
c. Based on differences in chemistry, physical properties, pharmacology, pharmacokinetics, and pharmacogenomics, recommend changes in pharmacotherapeutic regimens that minimize drug interactions, reduce side effects, increase compliance, and improve therapeutic outcomes.
c. Acquire, comprehend, synthesize, apply and evaluate information about the chemistry, physical properties, pharmacology, pharmacokinetics of therapeutic agents in order to design, implement, monitor, evaluate, and adjust care plans that are patient-specific and evidence based.

4. PATIENT-CENTERED CARE

Students will provide evidence-based patient-centered care in cooperation with patients, prescribers, and other members of an inter-disciplinary health care team taking into account relevant legal, ethical, social, cultural, economic, and professional issues that may impact therapeutic outcomes.

Specific Competencies:

a. Obtain, interpret and evaluate patient information to determine the presence of a disease or medical condition, assess the need for treatment and/or referral, and identify patient-specific factors that affect health, pharmacotherapy, and/or disease management.
b. Design, implement, monitor, evaluate, and adjust patient-centered care plans that are evidence-based.

c. Provide information regarding the selection, use and care of medical/surgical appliances and devices, self-care products, and durable medical equipment, as well as products and techniques for self-monitoring or health status and medical conditions.
d. Document patient-centered care activities to facilitate communication and collaboration among the health care team.
e. Retrieve, analyze, and interpret the professional, lay, and scientific literature to provide drug information to patients, caregivers, and other involved health care providers.
f. Apply quality assessment methods to the evaluation of patient-centered care.

5. SYSTEMS MANAGEMENT

Students will manage and use resources of the health care system, in cooperation with patients, prescribers, other health care providers, and administrative and supportive personnel, to promote health; to provide, assess, and coordinate safe, accurate, and time-sensitive medication distribution; and to improve therapeutic outcomes of medication use.

Specific Competencies:

a. Accurately select, prepare, and dispense medications in a manner that promotes safe and effective use.
b. Accurately prepare and compound individual or bulk medications in a manner that promotes safe and effective use.
c. Prepare, store, and assure quality of sterile dosage forms.
d. Provide counseling to patients, families, and care givers.
e. Manage human, physical, medical, informational, fiscal, and technological resources using relevant legal, ethical, social, cultural, economic, and professional principles/issues to assure efficiency and cost-effectiveness.
f. Apply patient- and population-specific data, quality assurance strategies, and research processes to: a) assure that medication use systems minimize drug misadventuring and optimize patient outcomes and b) to develop drug use and health policy, design pharmacy benefits and formulary systems.

6. PUBLIC HEALTH

Students will promote health improvement, wellness, and disease prevention in cooperation with patients, communities, at-risk populations, and other members of an inter-disciplinary team.

Specific Competencies:

a. Assure the availability of effective health promotion and disease prevention services.
    i. Promote public awareness of health and disease.
    ii. Provide emergency first aid treatment and cardiopulmonary resuscitation (CPR).
    iii. Provide patients with access to poison control and treatment information.
    iv. Provide immunizations and health-related screenings.

b. Provide population-based care.
    i. Develop and implement population-specific, evidence-based disease management programs and protocols based upon analysis of epidemiologic and pharmacoeconomic data, medication use criteria and review, and risk reduction strategies.
    ii. Retrieve, analyze, and interpret the professional, lay, and scientific literature to provide drug information to other health care providers and to the public.
    iii. Apply population-specific data, quality assurance strategies, and research processes to identify and resolve public health problems

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NDSU ENTRY-LEVEL PHARM.D. PROGRAM
PRE-PHARMACY CURRICULUM EFFECTIVE 2011

A minimum of 74 semester credits are required for entry to the professional program.

Transition Schedule: Only for students applying November 2012 for entrance to Professional Pharmacy Program Fall 2013. (If transferring in General Chemistry courses, see Options one, two, and three.)

FIRST YEAR (32 credits)			
FALL 2011	**Cr.**	**SPRING 2012**	**Cr.**
Biology 150/150L, General Biology I/Lab *	3/1	Chem 122, General Chemistry II * (S)	3
Chem 121, General Chemistry I * (S)	3	Chem 122L, General Chemistry II Lab (S)	1
Chem 121L, General Chemistry I Lab (S)	1	Comm 110, Fundamentals * (C)	3
English 120, Comp II [1] * (C)	3	Econ 201, Microeconomics * (B/G)	3
Math 146, Applied Calculus I * (R)	4	Stat 330, Introductory Statistics * (R)	3
University 189, Study Skills (F)	1	Elective – Humanities/Fine Arts (A)	3
TOTAL	**16**	**TOTAL**	**16**

[1] Students with composite ACT scores of 20 or lower must register for English 110 Fall Semester and take Engl 120 Spring Semester. Students who complete English 120 with a "C" or higher will receive credit for English 110 with a passing grade (P).

SECOND YEAR (39 credits)			
FALL 2012	**Cr.**	**SPRING 2013**	**Cr.**
Biol 220/220L, Human Anat.&Physio I * (S)	3/1	Biol 221/221L, Human Anat.&Physio II	3/1
Chem 341, Organic Chemistry *	3	Chem 342/341L, Organic Chemistry II	3/1
Comm 216, Intercultural Comm * (B/D)	3	Micr 460, Pathogenic Microbiology	3
Micr 202/202L[or 350/350L] Microbiology * (S)	2/1	Physics 211 (S)	3
Elective – Humanities & Fine Arts (A)	3	Wellness (W)	2
TOTAL	**16**	**TOTAL**	**16**
SUMMER 2013–Bioc 460, Biochemistry I, (3 cr.) AND Bioc 461, Biochemistry II (4 cr.)			

NOTE: Students who are admitted into the professional program will also be required to take English 324/325 prior to Phrm 480, Drug Literature

***Selected core courses will be used for selection criteria to determine GPA used in calculation for admission to the professional program. These courses must show evidence of letter grade, or other means of demonstrating acceptable competency (i.e. AP – CEEB) and MUST be completed by the end of fall semester prior to the January 1st deadline to apply to the pharmacy program. Remaining courses, which are required and listed in the pre-pharmacy curriculum, MUST be completed by the end of spring term. The only exception to this is that up to six credits of electives may be completed during the summer term, AND, for this transitional year only, Bioc 460 and 461, which students are required to take summer session 2013 if they plan to apply November 2012 to the professional pharmacy program.**

(ALL courses must be completed with at least a grade of "C.")

PROFESSIONAL CURRICULUM 2011 – 2012

P-1's (38 credits)			
FALL 2011	**cr**	**SPRING 2012**	**cr**
PSci 368, Pharmaceutics I	4	PSci 369, Pharmaceutics II	2
Phrm 340, Pathophysiology I	4	**Psci 410/610, Pharm Biotechnology**	**2**
Phrm 350, Intro to Pharmacy Practice	**2**	PSci 411, Dynamics I *(Principles)*	3
Phrm 351/L, Pharmaceutical Care I / Lab	2	Phrm 341, Pathophysiology II	4
Bioc 460, Biochemistry I	3	Phrm 352, Intro to Healthcare Systems	2
Micr 470, Basic Immunology	3	Bioc 461, Biochemistry II	4
TOTAL	**18**	**TOTAL**	**17**
SUMMER 2012 - Phrm 355, Introductory Pharmacy Practice Experience (IPPE) I , 120 hours = 3 cr. *			

P-2's (40 credits)			
FALL 2011	**cr**	**SPRING 2012**	**cr**
PSci 412, Dynamics II *(Oncology/ID)*	3	**Psci 410/610, Pharm Biotechnology**	**2**
PSci 413, Dynamics III *(Endo/Autonomic)*	3	PSci 414, Dynamics IV *(Cardiovascular)*	3
PSci 415, Dynamics V *(Pain/inflamm/GI)*	3	PSci 416, Dynamics VI *(Neuro/Psych)*	3
PSci 470, Pharmacokinetics	3	**Phrm 450, Self Care**	**3**
Phrm 451, Pharmaceutical Care III (ethics)	1	Phrm 452/L, Pharmaceutical Care II / Lab	1+1
Phrm 475, Pharmacy Management	3	Phrm 480, Drug Literature Eval	3
Engl 324, Writing for Health Profess., or Engl 325, Writing in the Sciences	3	Professional Elective (IPE Elective)	2
TOTAL	**19**	**TOTAL**	**18**
SUMMER 2012 - Phrm 455, IPPE II, 120 hours = 3 cr. *			

P-3's (33 credits)			
FALL 2011	**cr**	**SPRING 2012**	**cr**
Phrm 532, Infectious Disease	3	**Phrm 520, Special Populations**	**3**
Phrm 534, Endo//Rheumatology/ GI	**3**	**Phrm 560, Specialty Care Topics**	**2**
Phrm 535, Neoplastic Diseases	3	Phrm 536, Neurology/Psychiatry	3
Phrm 538, Cardiovascular/Pulmonary	4	Phrm 537, Renal Disease/Fluid & Electrolyte	3
Phrm 551/L, Pharmaceutical Care III/Lab	2	Phrm 552, Pharmaceutical Care IV	1
Phrm 555, IPPE III – (Public Health)	1	Phrm 552L, Pharm Care Lab IV / IPPE IV	1
Phrm 572, Pharmacy Law	2	Professional Elective (IPE)	2
TOTAL	**18**	**TOTAL**	**15**

P-4's (40 credits) 40 Week Advanced Pharmacy Practice Experience (APPE)* – Phrm 581, 582, & 583

* Students will be assigned away from Fargo/Moorhead for all or part of IPPE/APPE experiences.

PROFESSIONAL ELECTIVES

A minimum of four elective credits are required for graduation with the entry-level Pharm.D. degree. Electives are subject to the following rules:

1. NDSU courses 300 level or higher (or courses taken outside of NDSU corresponding to 300 level or higher) fulfills the elective requirement unless the course is listed as a non-degree eligible course.
2. Elective courses must be taken while enrolled in the entry-level Pharm.D. program (e.g. beginning Fall Semester P1 year).
3. Elective courses must be taken for a letter grade, and a grade of "C" or better is required.

Students may petition the Curriculum Committee to accept courses not covered in the above university policy by the following process:

1. Student shall direct a letter to the Curriculum Chair justifying the request.
2. Committee member shall obtain a syllabus for review and contact the instructor to address other criteria as needed.
3. Upon receipt of all required information, the Committee shall review information, determine status of request, and inform student.
4. The course will be added to the approved or non-approved special request elective list, as appropriate.
5. No petitions will be considered for coursework taken prior to enrollment in the Pharm.D. program.

Courses offered in the College of Pharmacy, Nursing, and Allied Sciences:
Phrm 462, Stress Management, 1 cr (pre-req: Doctor of pharmacy or Nursing students)
Phrm 463, Current Issues in Hospital and Institutional Pharmacy, 2 cr (pre-req: Phrm 352)
Phrm 464, Current Concepts in Pharmacy Practice, 2 cr (pre-req: Phrm 352)
Phrm 485/685, Economic Outcomes Assessment, 2 cr (co-req: Phrm 480)
Phrm 575, Advanced Pharmacy Management, 3 cr (pre-req: Phrm 475) - not offered on a regular basis
Psci 499, Special Topics in Pharmaceutical Sciences, 1 cr
PSci 545, Clinical Toxicology, 2 cr (pre-req: departmental approval)
Phrm 494 or PSci 494, Individual Study, 1-5 cr.
Individual work on research or project under the supervision of a faculty member. Students pursuing this option will need to follow these steps 4-6 weeks prior to the start of the semester of study: (1) Identify a faculty member who will agree to serve as your "course instructor" for the "Individual Study" elective; (2) Meet with the faculty member to decide on course content, credit hours, schedule, assignments, and grading scale (must be taken for a grade); (3) The faculty member constructs a syllabus with agreed upon information from #2 above and submits it to the Associate Dean for Academic Affairs & Assessment 2 weeks prior to the semester it will be offered.

Courses offered outside the College:
Creighton University School of Pharmacy: PHA 451 - On-line - Advanced Critical Care Elective, 2 cr. For more information, contact Dr. Daniel Hilleman (402-280-3325 or hilleman@creighton.edu) or Dr. Mark Malesker (402-280-1867 or malesker@creighton.edu).

University of Florida College of Pharmacy: PHA 6935 - On-line - Veterinary Pharmacy Course for Pharmacy Students, 2 cr. For more information visit - http://www.cop.ufl.edu/studaff/vetmed.htm.

Utah School on Alcoholism: Offered every June (one week), 2 cr The School, which is recognized internationally, provides awareness of the health and social problems of alcoholism and other drug dependencies. If you have an interest in learning more about the Utah School, please check out their website at www.uuhsc.utah.edu/uas.

Appendix 10B:

CURRICULUM REVIEW & REVISION MATRIX

Date	Curricular Issue	Description	Courses Affected	Revision / Improvement
9/07	Ability Based Outcomes	Curriculum based on outdated CAPE Outcomes.	All	Program Level Ability Based Outcomes approved by faculty 9/07
2007 - 2008	Integration	Lack of integration between didactic / lab / IPPE	All	Lab topics and IPPE integrated into curriculum
1.08 - 7/08	Gaps	Insufficient time allotted to "Introduction to Patient Consultation" (3 hours)	Phrm 351	Added 2 additional hours (5 hours total).
		Insufficient time allotted to Public Health (4 hours) + P3 Poster	Phrm 352	Added 5 additional topics (5 hours) to Phrm 551 (integrates with P3 Poster)
		Insufficient time allotted to Biotechnology (10 hours)	PSci 369	New course approved (PSci 410/610: Pharmaceutical Biotechnology – 2 credits (30 hours)). PSci 369 reduced from 3 to 2 credits.
		Insufficient time allotted to Ethics (4 hours)	Phrm 451	Added 3 additional hours (7hours total).
		Insufficient time allotted to Self Care / OTCs (18 hours)	Phrm 452 Phrm 551	Consolidated OTC's into one course, Phrm 452, and increased number of credits from 1 to 2 (30 hours).
		Insufficient time allotted to Physical Assessments (1-2 hours)	Phrm 551	Increased number of hours (18) and integrated it into Phrm 340/341: Pathophysiology.
	Duplication	Pharmacy calculations (18hr) duplicated in three P-1 courses	PSci 368 Phrm 351/L	Deleted calculations from Phrm 351 (3 hours)
		Management content duplicated in two P-2 courses (3 hours)	Phrm 451 Phrm 475	Deleted management content from Phrm 451 (3 hours)
9/08	Gap - IPPE	Insufficient time allotted to IPPE	Phrm 352/L (IPPE I)	Added 3 credits to P1 Spring curriculum (120 hours)
10/08	Credit Hrs, Relevancy, Duplication	Excess credit hours allocated to topics with decreased relevancy to current clinical practice. Some topics in PSci 471 duplicated in Phrm 520,532,537 536, & 538	PSci 470 PSci 471	Deleted PSci 471 (2 credits). Incorporated relevant clinical examples into PSci 470. Reinforced topics in Phrm 520 (Peds/Ger), 532 (ID), 537 (Renal), 536 (Neuro/Psych), & 538 (CV)
	Sequencing	New university requirement for an upper division English course to be added to the professional curriculum.	English 324 or 325	Course placed in fall semester of P2 year and designated as a pre-requisite to Phrm 480: Drug Literature Evaluation which requires students to write a term paper.
11/08 – 8/10	Sequencing, Credit Hrs, Relevancy, Duplication, Gaps	Initiated extensive review* of the Pharmacodynamics (pharmacology + medicinal chemistry) series. Sequencing: Toxicology taught before the drugs; Relevancy: Too much time devoted to malaria; Duplication: Anticoagulants, Fibrinolytics, Pharmacotherapy concepts, Pathophysiology principles; Gaps: time for oncology drugs	PSci 410, 411, 412, 413, 414, 415	Reduced # of credits from 18 to 15. Reordered the sequence to Principles, Toxicology, Oncology, ID, CV, Endocrine, Respiratory, GI, & Neuro-Psych. Eliminated non-essential duplications and non-relevant material. Insured appropriate time devoted to relevant topics (e.g. oncology).

CURRICULUM REVIEW AND REVISION MATRIX

Date	Curricular Issue	Description	Courses Affected	Revision / Improvement
1/09	Gap – IPPE & APPE in Post Bac. Pharm.D. program	Re: IPPE and APPE req. For the past several years, only foreign students have applied & been admitted to the Post-Baccalaureate Pharm.D. program. Although these students have a pharmacy degree, they do not have experiential experience in American settings.	Post – Baccalaureate Pharm.D. Curriculum	Phrm 351L (IPPE I), Phrm 451L (IPPE II) added to curriculum for students who do not have previous experience with either retail or hospital pharmacy in an American setting. Increased # of APPE credits (from 30 to 40). These changes will be implemented Fall 2009.
3/09	Gap - IPPE	Insufficient time allotted to IPPE	Phrm 451/L (IPPE II)	Added 3 additional credits (for a total of 4 credits) allocated to IPPE. Course will provide 140 hours of IPPE.
4/09	Relevancy, Credit hours, Gaps	Initiated a comprehensive review of the Pre-Pharmacy Curriculum	Pre-Pharmacy Curriculum	Tabled 10/09 to evaluate and finalize professional curriculum first.
5/09	Gap – Interprofessional Education	ACPE Standard No. 12 (Professional Competencies & Outcomes) emphasizes the need for interprofessional education to engender a team approach to patient care.	University Study 189	Designated 4 Univ. 189 sections (out of 15) as "interprofessional" pilot sections. Each section will contain an equal number of pre-pharmacy, pre-nursing, & pre-allied health students to begin the process of socialization.
5/09	Credit overload in Professional Curriculum	Explored options of moving some professional courses to pre-pharmacy	Micro 470 Micro 460 Biochem 460/461	Micro 470 to be re-configured to Micro 3XX and moved to pre-pharmacy curriculum. Transition will be completed in Spring 2012.
6/09	Gap - MTM	Insufficient practical experience in Medication Therapy Management	Phrm 551/L	Designed capstone MTM project involving real patients seen on campus to be initiated Fall 2009.
10/09 - 8/10	Professional Curriculum: Gaps, Duplication, Sequencing, Relevancy, Credit allocation Electives Integration	Initiated extensive review and revision of the professional curriculum. Gaps: anesthesia care, critical care, cultural competency, complementary and alternative medicine, genomics, informatics, interprofessional educational opportunities, leadership, patient safety, presentation skills, & public health. Sequencing: IPPE training occurs during the summer session but credits reflected during spring semester.	Professional Curriculum Bioc 460 Bioc 461	Adopted an Integrated Curriculum Model (3/10) so that Pharmacotherapy is taught the semester after Pharmacodynamics in order to reinforce and apply the material. Courses added to the curriculum: PSci 417 Pharmacogenomics, Phrm 540 Public Health for Pharmacists, Phrm 560 Specialty Care (anesthesia, critical care), Phrm 580 Pharmacotherapy Capstone, Phrm 570 Practice Improvement & Project Management. Credits increased in Phrm 351, 352, & 451 to better prepare students for IPPE and accommodate additional content (complimentary & alternative med). IPPE I & II credits moved to summer session. Additional Informatics content added to Phrm 475. Bioc 460 & 461 moved to the pre-pharm curriculum to free up space in professional curriculum. 2 cr of electives added to total 6 credits.

CURRICULUM REVIEW & REVISION MATRIX

Date	Curricular Area	Description	Courses Affected	Revision / Improvement
10/09	Attended AACP Curricular Institute in Scottsdale, Arizona			
1/10 – 8/10	Credit Hrs, Relevancy, Duplication, Gaps	Initiated extensive review* of the Pharmacotherapy series. Gaps: women's health, men's health, diabetes. Need for a capstone course in P3 year to encourage longitudinal learning & prepare students for APPE.	Phrm 520, 532, 534, 535, 538, 520, 536, 537, 558	Re-formulate Phrm 520 Peds/Gerontology to include women's and men's health topics. New course Phrm 580, Pharmacotherapy Capstone.
3/10	Gap- IPPE	Insufficient time devoted to IPPE (240 hours total)		New courses: Phrm 555 IPPE III and Phrm 556 IPPE IV adds 60 additional IPPE hours into P3 year bringing the total # of IPPE hours = 300. IPPE III & IV will focus on Public Health.
4/10 – 8/10	Relevancy Gaps Rigor	Entire pre-pharmacy curriculum evaluated to assess adequate preparation for the professional pharmacy curriculum.	Pre-Pharm Curriculum Eng 324/325 Biochem 460 & 461	**Courses deleted**: Math 147 Applied Calc II, Econ 105 Elements of Econ, Physics 120. **Courses added:** Stats 330, Physics 211, Com 216 Intercultural Communication. Eng 324/325 & Biochem 460/461 moved to Pre-Pharm. Length of Pre-Pharm increased to accommodate changes.
8/10	Curriculum Revision	Pre-Pharm, Pharmacodynamics Series, Pharmacotherapeutics Series, all new courses up for final approval by full faculty.	New Pre Pharmacy & Professional Curriculum	All changes and revisions approved by full faculty on 8-19-10
9/10 - 11/10	Curriculum Evaluation Plan	No formal course / curriculum evaluation plan.	Professional Curriculum	Course Evaluation Plan discussed, formalized, & adopted. All courses reviewed every 3 years.
10/10	IPPE Simulation	ACPE approves up to 60 hours of simulated pharmacy experience towards IPPE.	PHRM 552L Concept Pharmacy	Phrm 552L course updated to provide 30 hours of IPPE using actual and simulated activities such as MTM, Immunization administration, Intravenous Administration, Cholesteck & Glucometer, and MediMan
1/11	Classroom Assessment & Curricular Effectiveness	Faculty Retreat on Classroom Assessment	All	Classroom techniques to assess student learning discussed and Student Learning Outcomes Assessment Report developed to facilitate tying assessments to ABO's
1/11	Course Evaluation Plan	Course Evaluation Plan Piloted	PSCI 413 PSCI 415 PHRM 340 PHRM 475 PHRM 534	Changes made to the process: have students eval the course first & serve as ad-hoc members of the faculty work group; Require instructor to upload lecture notes into Atlas CM, Instructor to complete self-eval form electronically; ADAA to facilitate student groups; Inform faculty when their courses are scheduled for review.

CURRICULUM REVIEW & REVISION MATRIX

Date	Curricular Area	Description	Courses Affected	Revision / Improvement
3/11	Goal of the Curriculum	Curriculum Goal updated to meet ACPE Accreditation		"Prepare graduates with the professional competencies necessary of a generalist, entry-level pharmacist, to ensure optimal medication therapy outcomes and patient safety in any practice setting, satisfy the educational requirements for licensure as a pharmacist, and meet the requirements of the university for the degree."
6/11	Curriculum Evaluation	First set of courses to be officially evaluated to insure the curricular structure, content, organization, and pedagogy support student achievement of the Pharm.D. Program Ability Based Outcomes	PSCI 411 PSCI 545 PHRM 341 PHRM 480 PHRM 537 PHRM 558	See Course Evaluation Rubrics
7/11	Pre-Pharmacy Transition	Plan needed to transition into new Pre-Pharmacy curriculum	Bioc 460, Bioc 461	Chemistry Dept agreed to teach Bioc 460 & 461 series in the summer to assist with transition to new curriculum

Appendix 10C: New Professional Curriculum (effective 2015 – 2016)

P1 (39 credits)

FALL 2015	Credit	SPRING 2016	Credit
Pathophysiology I	4	Pathophysiology II	4
(411) Principles of Dynamics (includes Toxicology)	3	(412) Chemotherapeutic Agents (Oncology, ID)	3
Micr 470 Basic Immunology	3	(410) Biotechnology	2
(368) Pharmaceutics I	4	(369) Pharmaceutics II	2
(350) Introduction to Pharmacy Practice [Δ] • Consultation • Health Literacy & Cultural Competency • Drug Information • Prescription Law • **ADRs** • **Drug Interactions** } **from 451** • **HIPAA training** • **Pharm Care Plans**	**2**	**(352) Introduction to Healthcare Systems** [Δ] • RPh, Pharmacy, History • Healthcare professionals • **Hospitals, Ambulatory care, LTC** • Financing – Insurance, Medicare, Medicaid • Managed Care • **JACHO + Formulary information**	**2**
(351) Pharm Care • Pre-lab instruction	1	(470) Pharmacokinetics	3
(351L) Pharm Care Lab	1	**Professional Elective**	**2**
Total	**18**	**Total**	**18**

[Δ] **Previously Pharm Care Series** [Φ] **New course**

SUMMER: Phrm 355, IPPE I – Institutional Practice (120 hours)	**3 cr**

P2 (38 credits)

FALL 2015	Credit	SPRING 2016	Credit
(414) Cardiovascular Dynamics	3	(538) Cardiovascular Pulmonary Therapeutics	4
(413) Endocrine/Resp/GI Dynamics	**3**	(534) Endocrine/GI/**Rheumatology** Therapeutics	**3**
(417)Pharmacogenomics [Φ]	**2**	(415) Neuro-Psych Dynamics	3
(535) Oncology Therapeutics	3	**(450) Self Care** [Δ] • OTCs • Vitamins • Durable Medical Equipment • **CAM**	**3**
(532) Infectious Disease Therapeutics	3	(452) Pharm Care	1
(480) Drug Literature	3	(452L) Pharm Care Lab	1
		(xxx) Interprofessional Education Course TBD [Φ] • Communication / Conflict Resolution • Role and Scope of Practice • Patient Safety • Ethics	3
Total	**17**	**Total**	**18**

[Φ] New course [Δ] **Previously Pharm Care Series**

SUMMER: Phrm 455, IPPE II – Community Practice (120 hours)	**3 cr**

P3 (34 credits)

FALL 2015	Credit	SPRING 2016	Credit
(537) Fluid, Electrolyte, & Renal Therapeutics	3	**(560) Specialty Care Topics** Φ • Nutrition Support – (From GI Therapeutics- 10 hr) • **Peri-Operative / Surgical Care (Anesthesia)** • **Critical Care** • Home Health Care (2 hr) • Palliative Care (1 hr) • **Immunizations (9 hr) ????**	**2**
(536) Neuro-Psych Therapeutics	3	**(580) Pharmacotherapy Capstone** Φ • Integrated Cases (2-4 disease states/case) • Literature evaluation skills • Review of Practice guidelines • Presentation skills	**3**
(475) Pharmacy Management (+ **informatics)** • Strategic Planning • Managing Money • Managing Operations • Managing People • Informatics	**3**	**(520) Special Populations** † • Peds • Gerontology • **LTC from 551 (3 hr)** • **Women (from 534 + expanded)** • **Men**	**3**
(551) Pharm Care • Pre-lab instructions • Motivational Interviewing in healthcare for behavior change • Documenting pharmacist's recommendations & consultations in the medical record	1	(552) Pharm Care • Pre-lab instructions • **Immunizations – practical** • **First Aid/ CPR**	1
(551 L) Lab	1	(552 L) Lab / **IPPE IV (simulated activities)**	1
(540) Public Health Φ • Applied Epidemiology • Disease Prevention & Health Promotion • Environmental & Occupational Health • Behavioral Health • Health Disparities • Emergency Preparedness • Health policy, law, & ethics • Public Health Systems • Global Health	**3**	**(570) Practice Improvement & Project Management** Φ • Program Evaluation & Review Techniques (PERT) • Measuring Outcomes • Qualitative & Quantitative Project Management Tools, Problem Solving & Decision Analysis Tools • Statistical Tools • Health Care Quality Management • Process Improvement & Patient Flow • Job Scheduling, Patient Scheduling • Managing the Supply chain	**3**
(555) IPPE III – Public Health Focus Φ	**1**	(572) Law	2
Professional Elective	**2**	**Professional Elective**	**2**
Total	**17**	**Total**	**17**

Φ **New course**

† **Previously Peds/Gerontology**

APPENDIX 10D: NEW CURRICULUM TRANSITION SCHEDULE

PROFESSIONAL CURRICULUM TRANSITION- YEAR 1 (2011)

***(BioTech moves to P1 year & double taught)**

P-1's (38 credits)			
FALL 2011	**cr**	**SPRING 2012**	**cr**
PSci 368, Pharmaceutics I	4	PSci 369, Pharmaceutics II	2
Phrm 340, Pathophysiology I	4	**Psci 410/610, Pharm Biotechnology**	**2**
Phrm 350, Intro to Pharmacy Practice	**2**	PSci 411, Dynamics I *(Principles)*	3
Phrm 351/L, Pharmaceutical Care I / Lab	2	Phrm 341, Pathophysiology II	4
Bioc 460, Biochemistry I	3	Phrm 352, Intro to Healthcare Systems	2
Micr 470, Basic Immunology	3	Bioc 461, Biochemistry II	4
TOTAL	**18**	**TOTAL**	**17**
SUMMER 2012 - Phrm 355, Introductory Pharmacy Practice Experience (IPPE) I , 120 hours = 3 cr. *			

P-2's (40 credits)			
FALL 2011	**cr**	**SPRING 2012**	**cr**
PSci 412, Dynamics II *(Oncology/ID)*	3	**Psci 410/610, Pharm Biotechnology**	**2**
PSci 413, Dynamics III *(Endo/Autonomic)*	3	PSci 414, Dynamics IV *(Cardiovascular)*	3
PSci 415, Dynamics V *(Pain/inflamm/GI)*	3	PSci 416, Dynamics VI *(Neuro/Psych)*	3
PSci 470, Pharmacokinetics	3	**Phrm 450, Self Care**	**3**
Phrm 451, Pharmaceutical Care III (ethics)	1	Phrm 452/L, Pharmaceutical Care II / Lab	1+1
Phrm 475, Pharmacy Management	3	Phrm 480, Drug Literature Eval	3
Engl 324, Writing for Health Profess., or Engl 325, Writing in the Sciences	3	Professional Elective (IPE Elective)	2 (3)
TOTAL	**19**	**TOTAL**	**18**
SUMMER 2012 - Phrm 455, IPPE II, 120 hours = 3 cr. *			

P-3's (33 credits)			
FALL 2011	**cr**	**SPRING 2012**	**cr**
Phrm 532, Infectious Disease	3	**Phrm 520, Special Populations**	**3**
Phrm 534, Endo//Rheumatology/ GI	**3**	**Phrm 560, Specialty Care Topics**	**2**
Phrm 535, Neoplastic Diseases	3	Phrm 536, Neurology/Psychiatry	3
Phrm 538, Cardiovascular/Pulmonary	4	Phrm 537, Renal Disease/Fluid & Electrolyte	3
Phrm 551/L, Pharmaceutical Care III/Lab	2	Phrm 552, Pharmaceutical Care IV	1
Phrm 555, IPPE III – (Public Health)	1	Phrm 552L, Pharm Care Lab IV / IPPE IV	1
Phrm 572, Pharmacy Law	2	Professional Elective	2
TOTAL	**18**	**TOTAL**	**15**

P-4's (40 credits) 40 Week Advanced Pharmacy Practice Experience (APPE)* – Phrm 581, 582, & 583

* Students will be assigned away from Fargo/Moorhead for all or part of IPPE/APPE experiences.

PROFESSIONAL CURRICULUM TRANSITION – YEAR 2 (2012)

IPE required. Pharm 451 deleted

P-1's (38 credits)			
FALL 2012	**cr**	**SPRING 2013**	**cr**
PSci 368, Pharmaceutics I	4	PSci 369, Pharmaceutics II	2
Phrm 340, Pathophysiology I	4	Psci 410/610, Phrm Biotechnology	2
Phrm 350, Intro to Pharmacy Practice	2	PSci 411, Dynamics I *(Principles)*	3
Phrm 351/L, Pharmaceutical Care I / Lab	2	Phrm 341, Pathophysiology II	4
Bioc 460, Biochemistry I	3	Phrm 352, Intro to Healthcare Systems	2
Micr 470, Basic Immunology	3	Bioc 461, Biochemistry II	4
TOTAL	**18**	**TOTAL**	**17**
SUMMER 2013 - Phrm 355, Introductory Pharmacy Practice Experience (IPPE) I , 120 hours = 3 cr. *			

P-2's (38 credits)			
FALL 2012	**cr**	**SPRING 2013**	**cr**
PSci 412, Dynamics II *(Oncology/ID)*	3	PSci 414, Dynamics IV *(Cardiovascular)*	3
PSci 413, Dynamics III *(Endo/Autonomic)*	3	PSci 416, Dynamics VI *(Neuro/Psych)*	3
PSci 415, Dynamics V *(Pain/inflamm/GI)*	3	**Phrm xxx Interprofessional Education**	**3**
PSci 470, Pharmacokinetics	3	Phrm 450, Self Care	3
Phrm 475, Pharmacy Management	3	Phrm 452/L, Pharmaceutical Care II / Lab	1+1
Engl 324, Writing for Health Profess., or	3	Phrm 480, Drug Literature Eval	3
TOTAL	**18**	**TOTAL**	**17**
SUMMER 2013 - Phrm 455, IPPE II, 120 hours = 3 cr. *			

P-3's (35 credits)			
FALL 2012	**cr**	**SPRING 2013**	**cr**
Phrm 532, Infectious Disease	3	Phrm 520, Special Populations	3
Phrm 534, Endo/Rheumatology/GI	3	Phrm 560, Specialty Care Topics	2
Phrm 535, Neoplastic Diseases	3	Phrm 536, Neurology/Psychiatry	3
Phrm 538, Cardiovascular/Pulmonary	4	Phrm 537, Renal Disease/Fluid & Electrolyte	3
Phrm 551/L, Pharmaceutical Care III /Lab	2	Phrm 552, Pharmaceutical Care IV	1
Phrm 555, IPPE III (Public Health)	1	Phrm 552L, Pharm Care Lab IV/ IPPE IV	1
Professional Elective	2	Phrm 572, Pharmacy Law	2
		Professional Elective	2
TOTAL	**18**	**TOTAL**	**17**

P-4's (40 credits) 40 Week Advanced Pharmacy Practice Experience (APPE)* – Phrm 581, 582, & 583

* Students will be assigned away from Fargo/Moorhead for all or part of IPPE/APPE experiences.

PROFESSIONAL CURRICULUM TRANSITION – YEAR 3 (2013)

***(Biochem moves out of Professional Curriculum & taught in Pre-Professional Curriculum)**

P-1's (New)

FALL 2013	Cr	SPRING 2014	Cr
PSci 368, Pharmaceutics I	4	PSci 369, Pharmaceutics II	2
PSci 411, Principles of Dynamics	3	PSci 410/610 Biotechnology	2
Micr 470 Basic Immunology	3	(412) Chemotherapeutic Agents (Oncology, ID)	3
Phrm 340, Pathophysiology I	4	PSci 470 Pharmacokinetics	3
Phrm 350, Introduction to Pharmacy Prax	2	Phrm 341 Pathophysiology II	4
Phrm 351, Pharm Care	1	Phrm 352, Introduction to Healthcare Systems	2
Phrm 351L, Pharm Care Lab	1	Professional Elective	2
TOTAL	**18**	**TOTAL**	**18**
SUMMER 2014 - Phrm 355, Introductory Pharmacy Practice Experience (IPPE) I , 120 hours = 3 cr. *			

P-2's (Old)

FALL 2013	Cr	SPRING 2014	Cr
PSci 412, Dynamics II *(Oncology/ID)*	3	PSci 414, Dynamics IV (*Cardiovascular)*	3
PSci 413, Dynamics III (*Endo/Autonomic)*	3	PSci 416, Dynamics VI *(Neuro/Psych)*	3
PSci 415, Dynamics V (*Pain/Inflamm/GI)*	3	Pharm 450 Self Care	3
PSci 470, Pharmacokinetics	3	Phrm 452/L, Pharmaceutical Care II /L	1 + 1
Phrm 475, Pharmacy Management	3	Phrm 480, Drug Literature Eval	3
Eng 324,Writing for Health Professions or Eng 325, Writing in the Sciences	3	(xxx) Interprofessional Education Course	3
TOTAL	**18**	**TOTAL**	**17**
SUMMER 2014 - Phrm 455, IPPE II, 120 hours = 3 cr. *			

P-3's (Old)

FALL 2013	Cr	SPRING 2014	Cr
Phrm 532, Infectious Disease	3	Phrm 520, Special Populations	3
Phrm 534, Endo/Rheumatology/GI	3	Phrm 536, Neurology/Psychiatry	3
Phrm 535, Neoplastic Diseases	3	Phrm 537, Renal Disease/Fluid & Elect.	3
Phrm 538, Cardiovascular/Pulmonary	4	Phrm 552, Pharmaceutical Care IV	1
Phrm 551/L, Pharmaceutical Care III /L	2	Phrm 552L, Pharm Care Lab IV / IPPE IV	1
Phrm 555, IPPE III (Public Health)	1	Phrm 560, Specialty Care Topics	2
Professional Elective	2	Phrm 572, Pharmacy Law	2
		Professional Electives	2
TOTAL	**18**	**TOTAL**	**17**

P-4's (40 credits) 40 Week Advanced Pharmacy Practice Experience (APPE)* – Phrm 581, 582, & 583

* Students will be assigned away from Fargo/Moorhead for all or part of IPPE/APPE experiences

Electives: PSci 417/617 Genomics (2 cr), Phrm 540 Public Health (3 cr), Phrm 570 Prax Impvmt (3 cr)

PROFESSIONAL CURRICULUM TRANSITION – YEAR 4 (2014)

***(English 324/325 moves out of professional curriculum & is taught in pre-professional curriculum)**

P-1's (New)

FALL 2014	Cr	SPRING 2015	Cr
PSci 368, Pharmaceutics I	4	PSci 369, Pharmaceutics II	2
PSci 411, Principles of Dynamics	3	PSci 410/610 Biotechnology	2
Micr 470 Basic Immunology	3	PSci 412 Chemotherapeutic Agents (Oncology, ID)	3
Phrm 340, Pathophysiology I	4	PSci 470 Pharmacokinetics	3
Phrm 350, Introduction to Pharmacy Prax	2	Phrm 341 Pathophysiology II	4
Phrm 351, Pharm Care	1	Phrm 352, Introduction to Healthcare Systems	2
Phrm 351L, Pharm Care Lab	1	Professional Elective	2
TOTAL	**18**	**TOTAL**	**18**
SUMMER 2015 - Phrm 355, Introductory Pharmacy Practice Experience (IPPE) I , 120 hours = 3 cr. *			

P-2's (New)

FALL 2014	Cr	SPRING 2015	Cr
PSci 414, Cardiovascular Dynamics	3	PSci 415, Neuro-Psych Dynamics	3
PSci 413, Endocrine/Resp/GI Dynamics	3	Phrm 450, Self Care	3
PSci 417, Pharmacogenomics	2	Phrm 452, Pharm Care	1
Phrm 480, Drug Literature	3	Phrm 452L, Pharm Care Lab II	1
Phrm 532, Infectious Disease Therapeutics	3	Phrm 534, Endocrine/**Rheum/GI** Therapeutics	3
Phrm 535, Oncology Therapeutics	3	Phrm 538, Cardiovascular Pulmonary Therapeutics	4
		(xxx) Interprofessional Education Course TBD	3
TOTAL	**17**	**TOTAL**	**18**
SUMMER 2015 - Phrm 455, IPPE II, 120 hours = 3 cr. *			

P-3's (Old)

FALL 2014	Cr	SPRING 2015	Cr
Phrm 532, Infectious Disease	3	Phrm 520, Special Populations	3
Phrm 534, Endo/Rhemumatology/GI	3	Phrm 536, Neurology/Psychiatry	3
Phrm 535, Neoplastic Diseases	3	Phrm 537, Renal Disease/Fluid & Elect.	3
Phrm 538, Cardiovascular/Pulmonary	4	Phrm 552, Pharmaceutical Care IV	1
Phrm 551/L, Pharmaceutical Care III /L	2	Phrm 552L, Pharm Care Lab IV / IPPE IV	1
Phrm 555, IPPE III – Public Health	1	Phrm 560, Specialty Care Topics	2
Professional Electives	2	Phrm 572, Pharmacy Law	2
		Professional Electives	2
TOTAL	18	**TOTAL**	17

P-4's (40 credits) 40 Week Advanced Pharmacy Practice Experience (APPE)* – Phrm 581, 582, & 583

* Students will be assigned away from Fargo/Moorhead for all or part of IPPE/APPE experiences

Electives: Phrm 540 Public Health (3 cr), Phrm 570 Prax Improvement (3 cr)

PROFESSIONAL CURRICULUM FULL IMPLEMENTATION - 2015/2016

P-1's (New)

FALL 2015	Cr	SPRING 2016	Cr
PSci 368, Pharmaceutics I	4	PSci 369, Pharmaceutics II	2
PSci 411, Principles of Dynamics	3	PSci 410/610 Biotechnology	2
Micr 470 Basic Immunology	3	PSci 412 Chemotherapeutic Agents (Oncology/ID)	3
Phrm 340, Pathophysiology I	4	PSci 470 Pharmacokinetics	3
Phrm 350, Introduction to Pharmacy Prax	2	Phrm 341 Pathophysiology II	4
Phrm 351, Pharm Care I	1	Phrm 352, Introduction to Healthcare Systems	2
Phrm 351L, Pharm Care Lab	1	Professional Elective	**2**
TOTAL	**18**	**TOTAL**	**18**
SUMMER 2016 - Phrm 355, Introductory Pharmacy Practice Experience (IPPE) I , 120 hours = 3 cr. *			

P-2's (New)

FALL 2015	Cr	SPRING 2016	Cr
PSci 413, Endocrine/Resp/GI Dynamics	3	PSci 415, Neuro-Psych Dynamics	3
PSci 414, Cardiovascular Dynamics	3	Phrm 450, Self Care	3
PSci 417, Pharmacogenomics	3	Phrm 452, Pharm Care II	1
Phrm 480, Drug Literature	2	Phrm 452L, Pharm Care Lab	1
Phrm 532, Infectious Disease Therapeutics	3	Phrm 534, Endocrine/Rheum/GI **T**herapeutics	3
Phrm 535, Oncology Therapeutics	3	Phrm 538, Cardiovascular Pulm Therapeutics	4
		(xxx) Interprofessional Education Course	3
TOTAL	**17**	**TOTAL**	**18**
SUMMER 2016 - Phrm 455, IPPE II, 120 hours = 3 cr. *			

P-3's (New)

FALL 2015	Cr	SPRING 2016	Cr
Phrm 475, Pharmacy Management	3	Phrm 520, Special Populations	3
Phrm 536, Neuro-Psych Therapeutics	3	Phrm 552, Pharm Care IV	1
Phrm 537, Fluid, Electrolyte, & Renal	3	Phrm 552L, Pharm Care Lab IV – IPPE IV	1
Phrm 540, Public Health	3	Phrm 560, Specialty Care Topics	2
Phrm 551, Pharm Care III	1	**Phrm 570, Prax Improvement & Proj. Mngmt**	**3**
Phrm 551L, Pharm Care Lab	1	Phrm 572, Pharmacy Law	2
Phrm 555, IPPE III (Public Health)	1	**Phrm 580, Pharmacotherapy Capstone**	3
Professional Elective	2		
TOTAL	17	**TOTAL**	17

P-4's (40 credits) 40 Week Advanced Pharmacy Practice Experience (APPE)* – Phrm 581, 582, & 583

*** Students will be assigned away from Fargo/Moorhead for all or part of IPPE/APPE experiences**

Appendix 10E:
College of Pharmacy, Nursing, and Allied Sciences
PRE-PHARMACY CURRICULUM - Fall 2011

Name: _____

ID: _____

GENERAL EDUCATION REQUIRED PRE-REQUISITE COURSES:

Course	Number	Course Title	Credits	Sem/YR	Grade
First Year Experience (F)			**1 sem credit**		
UNIV^	189	Skills for Academic Success	1		
Communications (C)			**12 sem credits**		
ENGL	110 [1]	College Composition I	3		
ENGL	120*[1]	College Composition II	3		
COMM	110*	Fundamentals of Public Speaking	3		
ENGL	324 or 325	Upper level English	3		
Quantitative Reasoning (R)			**3 sem credits**		
MATH	146*	Applied Calc I	4		
Science & Technology (S)			**10 sem credits**		
CHEM	121*	General Chemistry I	3		
CHEM	121L	General Chemistry I Lab	1		
CHEM	122*	General Chemistry II	3		
PHYS	211	College Physics I	3		
Humanities & Fine Arts (A)			**6 sem credits**		
			3		
			3		
Social & Behavioral Science (B)			**6 sem credits**		
ECON	201	Microeconomics	3		
COMM	216	Intercultural Communication	3		
Wellness (W)			**2 sem credits**		
			2		
Global Perspectives (G)					
ECON	201	Microeconomics	3		
Cultural Diversity (D) **					
			3		

DEPARTMENT REQUIRED PRE-REQUISITE COURSES:

Course	Number	Course Title	Credits	Sem/YR	Grade
BIOL	150*	General Biology I	3		
BIOL	150L*	General Biology I Lab	1		
BIOL	220*	Human Anat. & Phys I	3		
BIOL	220L*	Human Anat. & Phys I Lab	1		
BIOL	221	Human Anat. & Phys II	3		
BIOL	221L	Human Anat. & Phys II Lab	1		
CHEM	122L	General Chemistry II Lab	1		
CHEM	341*	Organic Chemistry I	3		
CHEM	341L	Organic Chemistry I Lab	1		
CHEM	342	Organic Chemistry II	3		
MICR	202*	Intro. Microbiology	2		
MICR	202L*	Intro. Microbiology and Lab	1		
MICR	TBA	Medical Microbiology (formerly Micr 460-Pathogenic)	3		
Stat	330 *	Introductory Statistics	3		
Bioc	460	Biochemistry I	3		
Bioc	461	Biochemistry II	4		

Notes:

* Denotes core courses used in admission GPA

[1]Students with composite ACT score of 21 or higher will be encouraged to register for English 120. Students who complete English 120 with a "C" or better will receive credit for English 110 with a passing grade of (P).

** Cultural Diversity (D) may come from either Humanities or Social & Beh Sci

^UNIV 189 is required for students with fewer than 24 earned transfer credits.

All Required Courses Must be Completed with at Least a Grade of "C"

All courses must be completed in order to apply for the professional program in the last spring semester pre-requisite courses are taken.

Advisor: _____

Appendix 10F: Pre-Pharmacy Options

NDSU ENTRY-LEVEL PHARM.D. PROGRAM

Students applying November 2012 and beyond:

NOTE: If applying November 2012 only, core status is removed from Chem 342 & Bioc 460

Option One: For students with AP or PSEO/Dual Credit covering Chem 121/L AND Chem 122/L (4 Semesters, 77 credits-includes credit for Engl 110)

FIRST YEAR			
FALL	**Cr**	**SPRING**	**Cr**
Biology 150/150L, General Biology I/Lab *	3/1	Chem 342, Organic Chemistry II *	3
Chem 341, Organic Chemistry I *	3	Chem 341L, Organic Chemistry I Lab	1
English 120, Comp II[1] * (C)	3	Comm 110, Fundamentals * (C)	3
Math 146, Applied Calculus I * (R)	4	Econ 201, Microeconomics * (B/G)	3
University 189, Study Skills (F)	1	Stats 330, Introductory Statistics * (R)	3
Elective – Humanities & Fine Arts (A)	3	Wellness (W)	2
	18		15

[1] Students with composite ACT scores of 20 or lower must register for English 110 Fall Semester and take Engl 120 Spring Semester. Students who complete English 120 with a "C" or higher will receive credit for English 110 with a passing grade (P).

SECOND YEAR			
FALL	**Cr**	**SPRING**	**Cr**
Bioc 460, Biochemistry I *	3	Bioc 461, Biochemistry II	4
Biol 220/220L, Human Anat & Physio * (S)	3/1	Biol 221/221L, Human Anat & Physio II	3/1
Comm 216, Intercultural Comm *(B/D)	3	Eng 324/325, Upper division English (C)	3
Micr 202/202L or 350/350L * (S)	2/1	Micr 460, Pathogenic Microbiology	3
Elective – Humanities & Fine Arts (A)	3	Phys 211, College Physics I (S)	3
	16		17

***Selected core courses will be used for selection criteria to determine GPA used in calculation for admission to the professional program. These courses must show evidence of letter grade, or other means of demonstrating acceptable competency (i.e. AP – CEEB) and MUST be completed by the end of fall semester prior to the January 1st deadline to apply to the pharmacy program. Remaining courses, which are required and listed in the pre-pharmacy curriculum, MUST be completed by the end of spring term. The only exception to this is that up to six credits of electives may be completed during the summer term.**

(ALL courses must be completed with at least a grade of "C.")

NDSU ENTRY-LEVEL PHARM.D. PROGRAM

Students applying November 2012 and beyond:

NOTE: If applying November 2012 only, core status is removed from Chem 342 & Bioc 460

Option Two: For students with AP or PSEO/Dual Credit covering Chem 121 AND Chem 122 - no labs (4 Semesters, 77 credits-includes credit for Engl 110)

FIRST YEAR			
FALL	**Cr**	**SPRING**	**Cr**
Biology 150/150L, General Biology I/Lab *	3/1	Chem 122L (S)	1
Chem 121L, General Chemistry I Lab (S)	1	Chem 342, Organic Chemistry II *	3
Chem 341, Organic Chemistry I *	3	Comm 110, Fundamentals * (C)	3
English 120, Comp II[1] * (C)	3	Econ 201, Microeconomics * (B/G)	3
Math 146, Applied Calculus I * (R)	4	Stat 330, Introductory Statistics * (R)	3
University 189, Study Skills (F)	1	Elective – Humanities & Fine Arts (A)	3
	16		16

[1] Students with composite ACT scores of 20 or lower must register for English 110 Fall Semester and take Engl 120 Spring Semester. Students who complete English 120 with a "C" or higher will receive credit for English 110 with a passing grade (P).

SECOND YEAR			
FALL	**Cr**	**SPRING**	**Cr**
Bioc 460, Biochemistry I *	3	Bioc 461, Biochemistry II	4
Biol 220/220L, Human Anat & Physio * (S)	3/1	Biol 221/221L, Human Anat & Physio II	3/1
Chem 341L, Organic Chemistry Lab I	1	Engl 324/325, Upper division English (C)	3
Comm 216, Intercultural Comm *(B/D)	3	Micr 460, Pathogenic Microbiology	3
Micr 202/202L or 350/350L * (S)	2/1	Phys 211, College Physics I (S)	3
Elective – Humanities & Fine Arts (A)	3	Wellness (W)	2
	17		19

***Selected core courses will be used for selection criteria to determine GPA used in calculation for admission to the professional program. These courses must show evidence of letter grade, or other means of demonstrating acceptable competency (i.e. AP – CEEB) and MUST be completed by the end of fall semester prior to the January 1st deadline to apply to the pharmacy program. Remaining courses, which are required and listed in the pre-pharmacy curriculum, MUST be completed by the end of spring term. The only exception to this is that up to six credits of electives may be completed during the summer term.**

(ALL courses must be completed with at least a grade of "C.")

NDSU ENTRY-LEVEL PHARM.D. PROGRAM

Students applying November 2012 and beyond:

NOTE: If applying November 2012 only, core status is removed from Chem 342 & Bioc 460

Option Three: For students with Chem 121 only. (4 Semesters + 1 Summer Session, 77 credits-includes credit for Engl 110)

FIRST YEAR					
FALL		**Cr**	**SPRING**		**Cr**
Chem 122, General Chemistry II	* (S)	3	Chem 122L, General	(S)	1
Chem 121L, General Chemistry I Lab	(S)	1	Chem 341, Organic Chemistry I	*	3
English 120, Comp II[1]	* (C)	3	Comm 110, Fundamentals	* (C)	3
Math 146, Applied Calculus I	* (R)	4	Econ 201, Microeconomics	* (B/G)	3
Biology 150/150L, General Biology I/Lab	*	3/1	Stats 330, Introductory Statistics	* (R)	3
University 189, Study Skills	(F)	1	Elective - Humanities & Fine Arts	(A)	3
		16			16
SUMMER SESSION – Chem 342* Organic Chemistry II, 3 cr.					

[1] Students with composite ACT scores of 20 or lower must register for English 110 Fall Semester and take Engl 120 Spring Semester. Students who complete English 120 with a "C" or higher will receive credit for English 110 with a passing grade (P).

SECOND YEAR					
FALL		**Cr**	**SPRING**		**Cr**
Bioc 460, Biochemistry I	*	3	Bioc 461, Biochemistry II		4
Biol 220/220L, Human Anat & Physio	* (S)	3/1	Biol 221/221L, Human Anat & Physio II		3/1
Chem 341L, Organic Chemistry I Lab		1	Engl 324/325, Upper division English	(C)	3
Comm 216, Intercultural Comm	* (B/D)	3	Micr 460, Pathogenic Microbiology		3
Micr 202/202L or 350/350L	* S)	2/1	Phys 211, College Physics I	(S)	3
Elective - Humanities & Fine Arts	(A)	3	Wellness	(W)	2
		17			19

***Selected core courses will be used for selection criteria to determine GPA used in calculation for admission to the professional program. These courses must show evidence of letter grade, or other means of demonstrating acceptable competency (i.e. AP – CEEB) and MUST be completed by the end of fall semester prior to the January 1st deadline to apply to the pharmacy program. Remaining courses, which are required and listed in the pre-pharmacy curriculum, MUST be completed by the end of spring term. The only exception to this is that up to six credits of electives may be completed during the summer term.**

(ALL courses must be completed with at least a grade of "C.")

NDSU ENTRY-LEVEL PHARM.D. PROGRAM

Students applying November 2013 and beyond: (Options One through Three or Option Four)

Option Four: Allows room for a minor of study. (6 Semesters, 77 credits-includes credit for Engl 110)

FIRST YEAR					
FALL		**Cr**	**SPRING**		**Cr**
Chem 121, General Chemistry I *	(S)	3	Biology 150/150L, General Biology I/Lab *		3/1
Chem 121L, General Chemistry I Lab	(S)	1	Chem 122, General Chemistry II *	(S)	3
English 120, Composition II[1] *	(C)	3	Chem 122L, General Chemistry II Lab	(S)	1
Math 146, Applied Calculus I *	(R)	4	Comm 110, Fundamentals *	(C)	3
University 189, Study Skills	(F)	1	Wellness	(W)	2
		12			13

[1] Students with composite ACT scores of 20 or lower must register for English 110 Fall Semester and take Engl 120 Spring Semester. Students who complete English 120 with a "C" or higher will receive credit for English 110 with a passing grade (P).

SECOND YEAR					
FALL		**Cr**	**SPRING**		**Cr**
Chem 341, Organic Chemistry I *		3	Biol 221/221L, Human Anat & Physio II		3/1
Biol 220/220L, Human Anat & Physio *	(S)	3/1	Chem 342, Organic Chemistry II *		3
Comm 216, Intercultural Comm *	(B/D)	3	Chem 341L, Organic Chemistry I Lab		1
Econ 201, Microeconomics *	(B/G)	3	Phys 211, College Physics I	(S)	3
Elective - Humanities & Fine Arts	(A)	3	Elective - Humanities & Fine Arts	(A)	3
		16			14

THIRD YEAR					
FALL		**Cr**	**SPRING**		**Cr**
Bioc 460, Biochemistry I *		3	Bioc 461, Biochemistry II		4
Stat 330, Introductory Statistics *	(R)	3	Engl 324/325, Upper Division English	(C)	3
Micr 202/202L or 350/350L *	(S)	2/1	Micr 460, Pathogenic Microbiology		3
Credits towards Minor		6	Credits towards Minor		5
		15			15

***Selected core courses will be used for selection criteria to determine GPA used in calculation for admission to the professional program. These courses must show evidence of letter grade, or other means of demonstrating acceptable competency (i.e. AP – CEEB) and MUST be completed by the end of fall semester prior to the January 1st deadline to apply to the pharmacy program. Remaining courses, which are required and listed in the pre-pharmacy curriculum, MUST be completed by the end of spring term. The only exception to this is that up to six credits of electives may be completed during the summer term.**

(ALL courses must be completed with at least a grade of "C.")

Appendix 10G:
NDSU ENTRY-LEVEL PHARM.D. PROGRAM
PRE-PHARMACY CURRICULUM EFFECTIVE 2011

A minimum of 77 semester credits are required for entry to the professional program.

Transition Schedule: Only for students <u>applying November 2012</u> for entrance to Professional Pharmacy Program Fall 2013. (If transferring in General Chemistry courses, see Options one, two, and three.)

FIRST YEAR (32 credits)			
FALL 2011	**Cr.**	**SPRING 2012**	**Cr.**
Biology 150/150L, General Biology I/Lab *	3/1	Chem 122, General Chemistry II * (S)	3
Chem 121, General Chemistry I * (S)	3	Chem 122L, General Chemistry II Lab (S)	1
Chem 121L, General Chemistry I Lab (S)	1	Comm 110, Fundamentals * (C)	3
English 120, Comp II [1] * (C)	3	Econ 201, Microeconomics * (B/G)	3
Math 146, Applied Calculus I * (R)	4	Stat 330, Introductory Statistics * (R)	3
University 189, Study Skills (F)	1	Elective – Humanities/Fine Arts (A)	3
TOTAL	**16**	**TOTAL**	**16**

[1] Students with composite ACT scores of 20 or lower must register for English 110 Fall Semester and take Engl 120 Spring Semester. Students who complete English 120 with a "C" or higher will receive credit for English 110 with a passing grade (P).

SECOND YEAR (39 credits)			
FALL 2012	**Cr.**	**SPRING 2013**	**Cr.**
Biol 220/220L, Human Anat.&Physio I * (S)	3/1	Biol 221/221L, Human Anat.&Physio II	3/1
Chem 341, Organic Chemistry *	3	Chem 342/341L, Organic Chemistry II	3/1
Comm 216, Intercultural Comm * (B/D)	3	Micr 460, Pathogenic Microbiology	3
Micr 202/202L[or 350/350L] Microbiology * (S)	2/1	Physics 211 (S)	3
Elective – Humanities & Fine Arts (A)	3	Wellness (W)	2
TOTAL	**16**	**TOTAL**	**16**
SUMMER 2013–Bioc 460, Biochemistry I, (3 cr.) AND Bioc 461, Biochemistry II (4 cr.)			

NOTE: Students who are admitted into the professional program will also be required to take English 324/325 prior to Phrm 480, Drug Literature

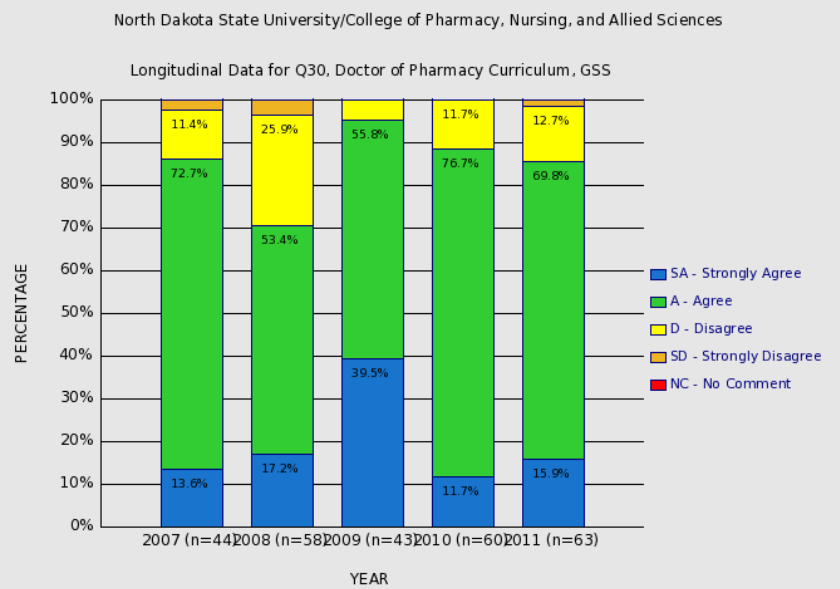
***Selected core courses will be used for selection criteria to determine GPA used in calculation for admission to the professional program. These courses must show evidence of letter grade, or other means of demonstrating acceptable competency (i.e. AP – CEEB) and <u>MUST</u> be completed by the end of fall semester prior to the January 1st deadline to apply to the pharmacy program. Remaining courses, which are required and listed in the pre-pharmacy curriculum, MUST be completed by the end of spring term. The only exception to this is that up to six credits of electives may be completed during the summer term, AND, for this transitional year only, Bioc 460 <u>and</u> 461, which students are required to take summer session 2013 if they plan to apply November 2012 to the professional pharmacy program.**

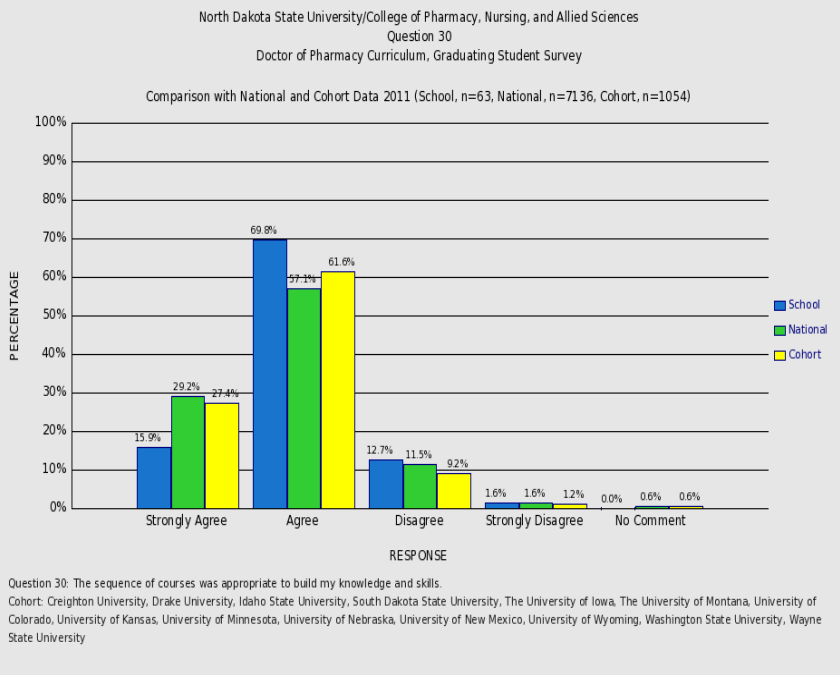
(ALL courses must be completed with at least a grade of "C.")

Appendix 10H: AACP Surveys

Graduating Student Survey

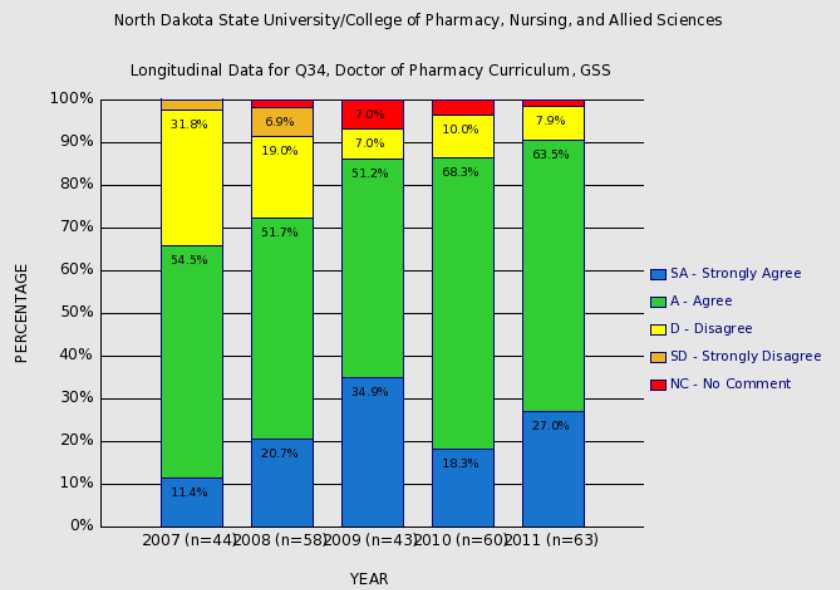
Question: 30. The sequence of courses was appropriate to build my knowledge and skills.



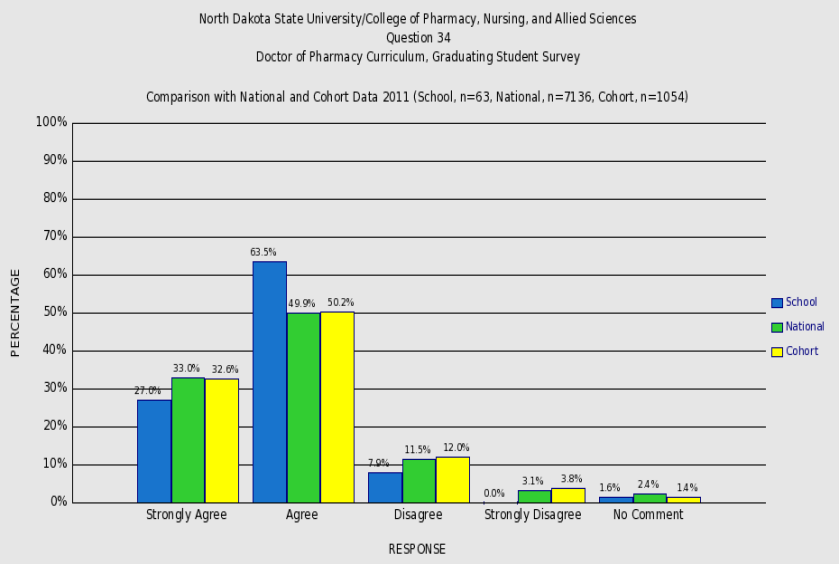


Graduating Student Survey

Question: 34. Pharmacy-related elective courses met my needs as a Pharm.D. student.



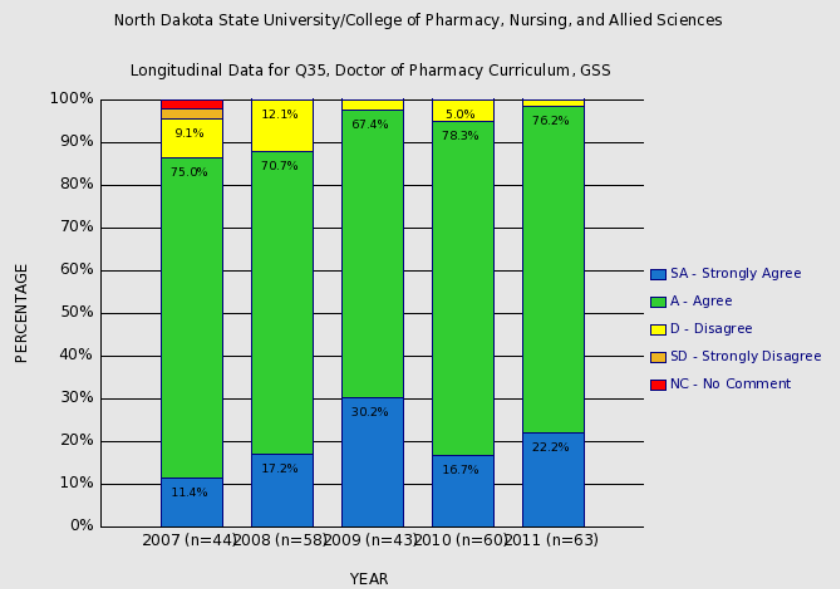
Question 34: Pharmacy-related elective courses met my needs as a Pharm.D. student.
Please note that in 2008, some questions had only the options of Agree, Disagree and No Comment.
However these graphs are based on latest survey specifications.

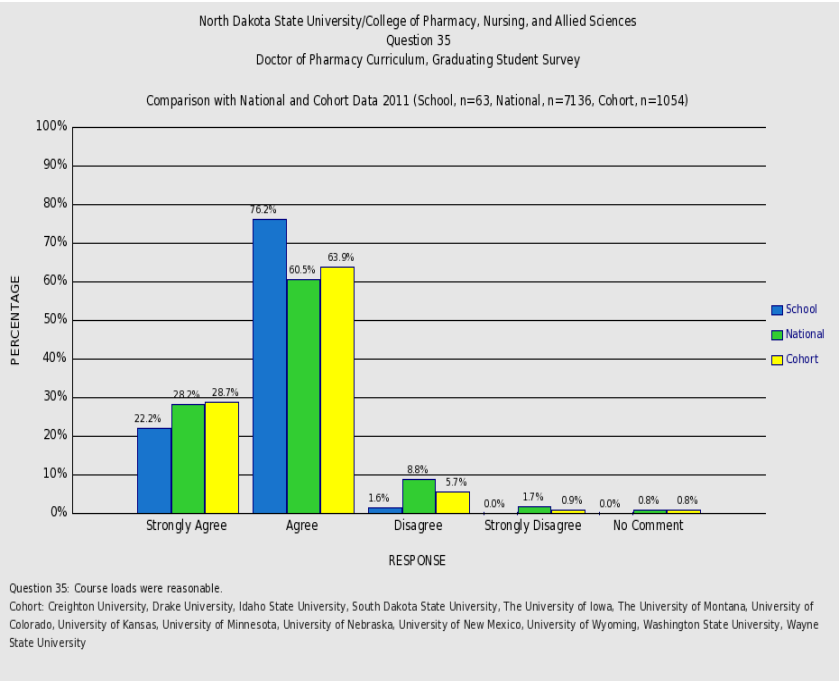


Question 34: Pharmacy-related elective courses met my needs as a Pharm.D. student.
Cohort: Creighton University, Drake University, Idaho State University, South Dakota State University, The University of Iowa, The University of Montana, University of Colorado, University of Kansas, University of Minnesota, University of Nebraska, University of New Mexico, University of Wyoming, Washington State University, Wayne State University

Graduating Student Survey

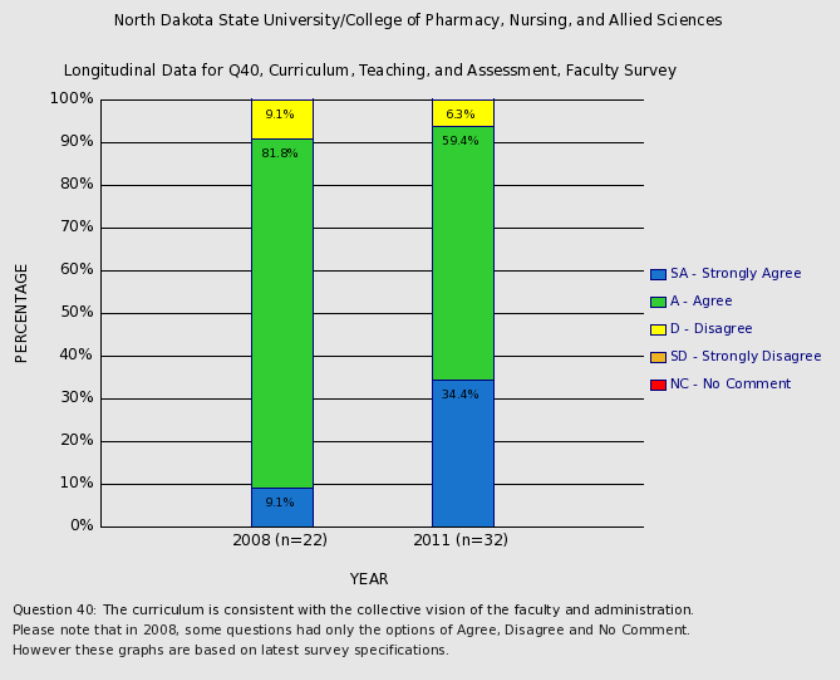
Question: 35. Course loads were reasonable.



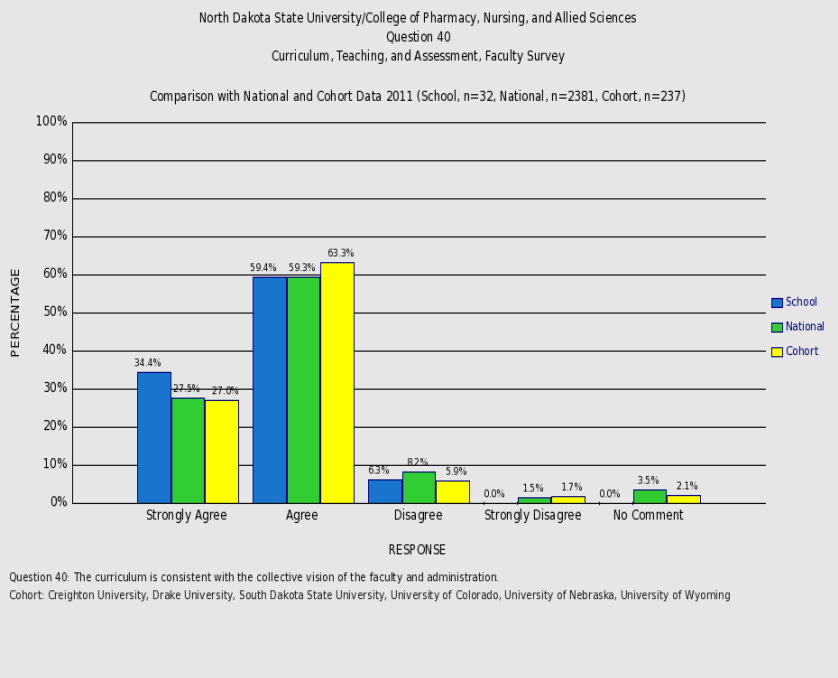


Faculty Survey

Question: 40. The curriculum is consistent with the collective vision of the faculty and administration.



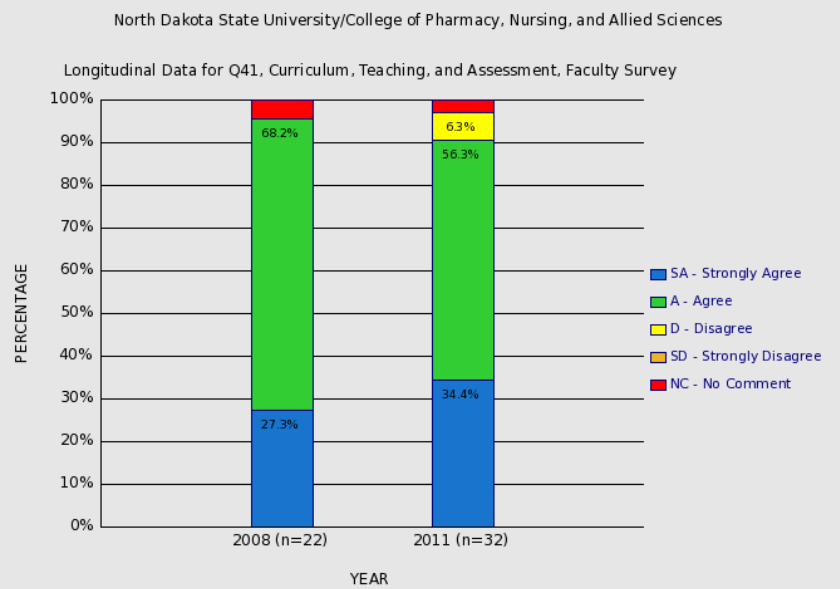
Question 40: The curriculum is consistent with the collective vision of the faculty and administration.
Please note that in 2008, some questions had only the options of Agree, Disagree and No Comment.
However these graphs are based on latest survey specifications.

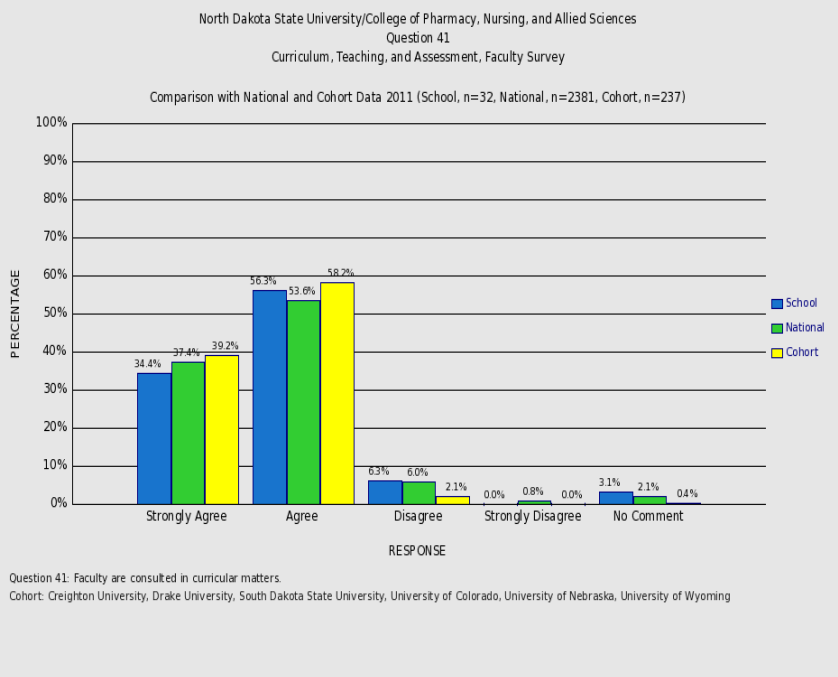


Question 40: The curriculum is consistent with the collective vision of the faculty and administration.
Cohort: Creighton University, Drake University, South Dakota State University, University of Colorado, University of Nebraska, University of Wyoming

Faculty Survey

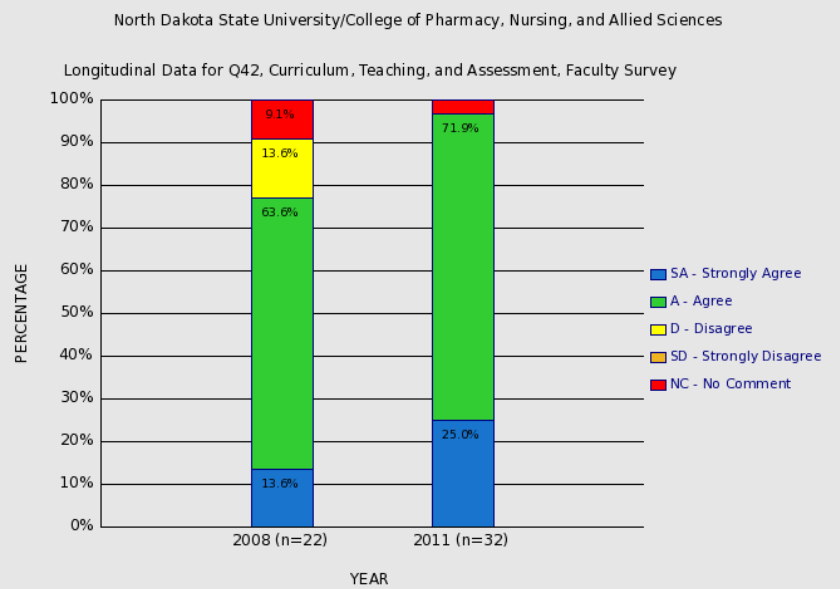
Question: 41. Faculty are consulted in curricular matters.

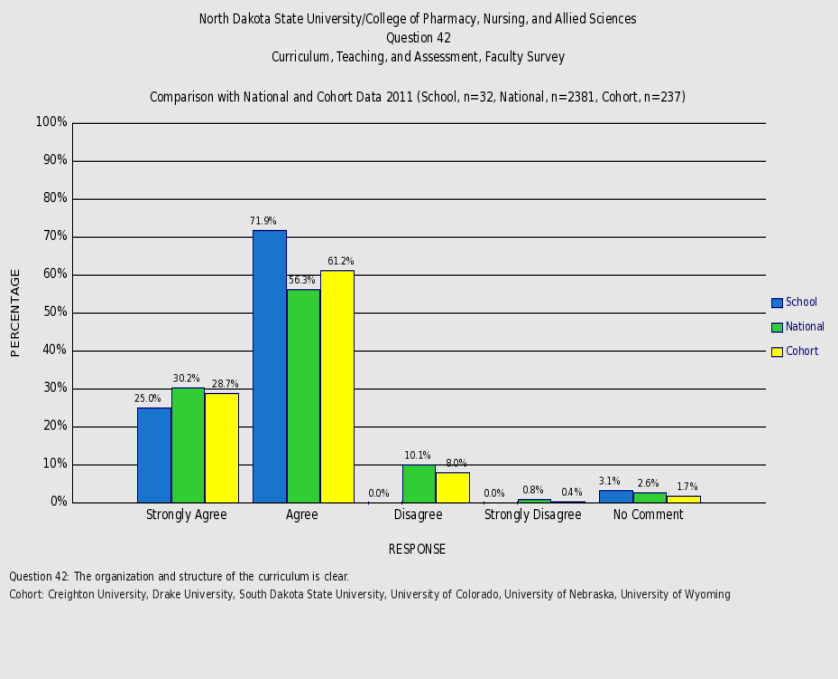




Faculty Survey

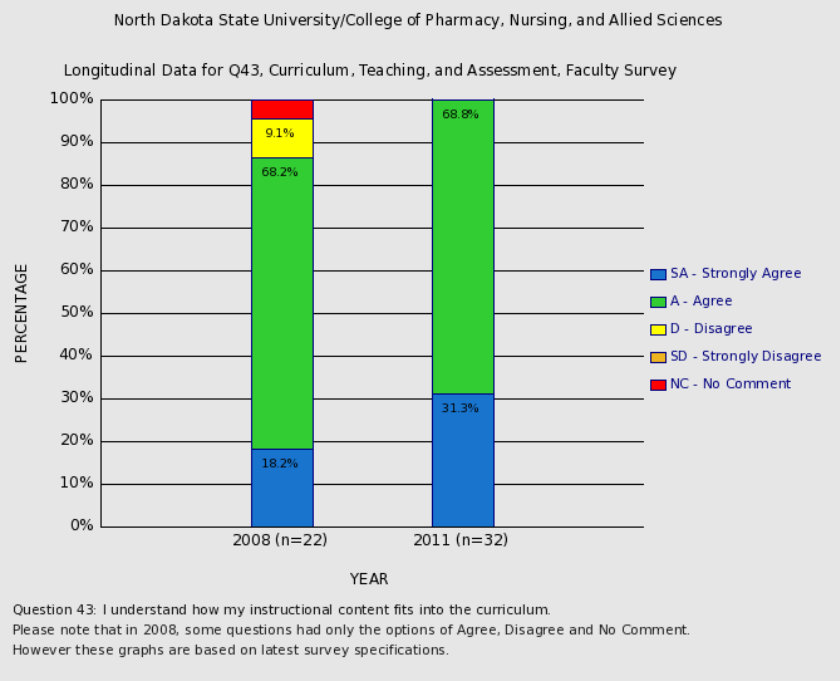
Question: 42. The organization and structure of the curriculum is clear.

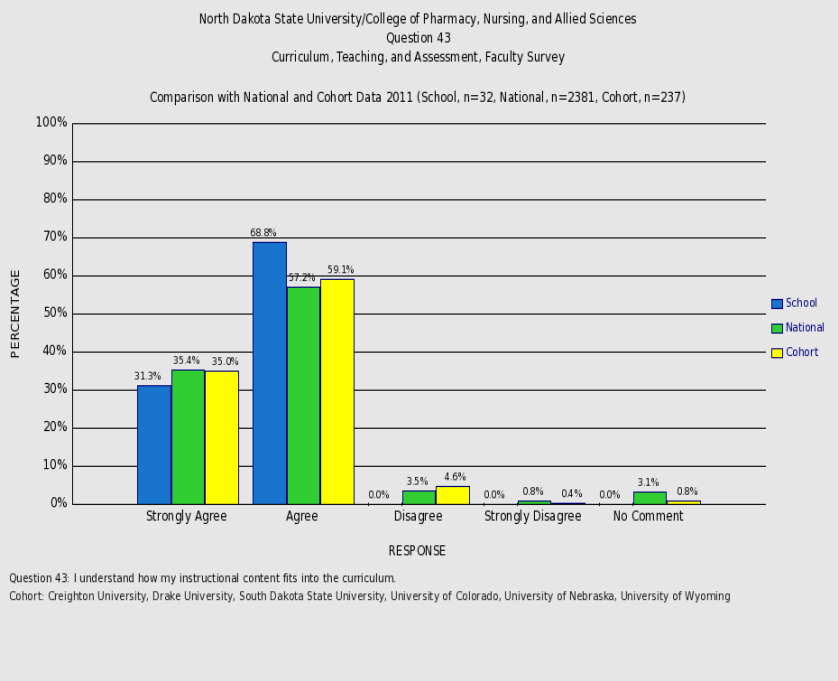




Faculty Survey

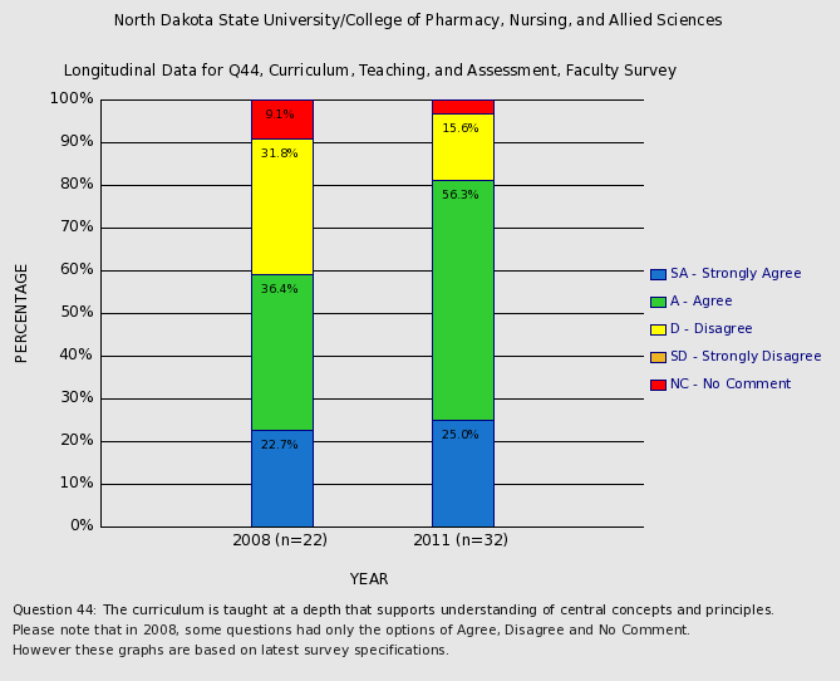
Question: 43. I understand how my instructional content fits into the curriculum.



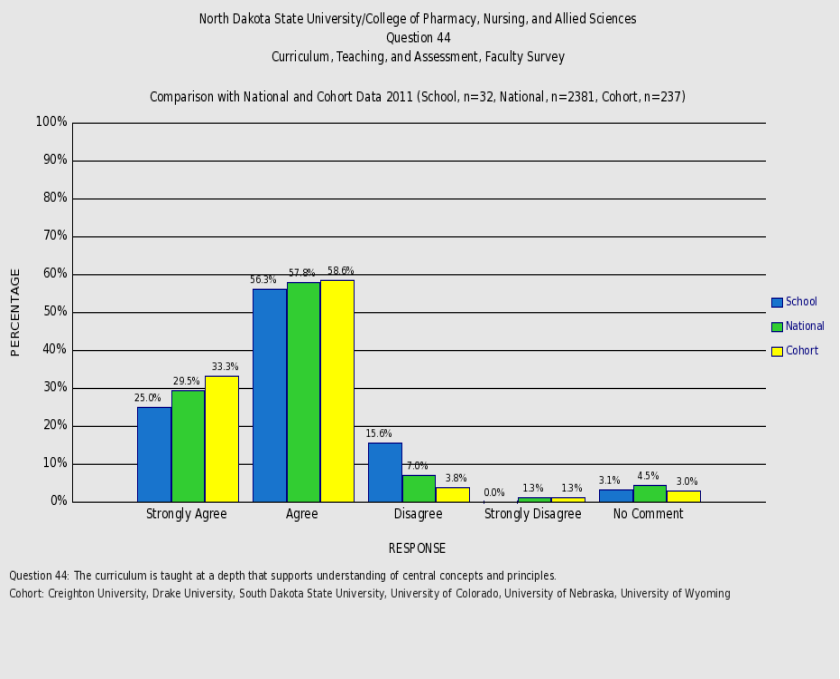


Faculty Survey

Question: 44. The curriculum is taught at a depth that supports understanding of central concepts and principles.



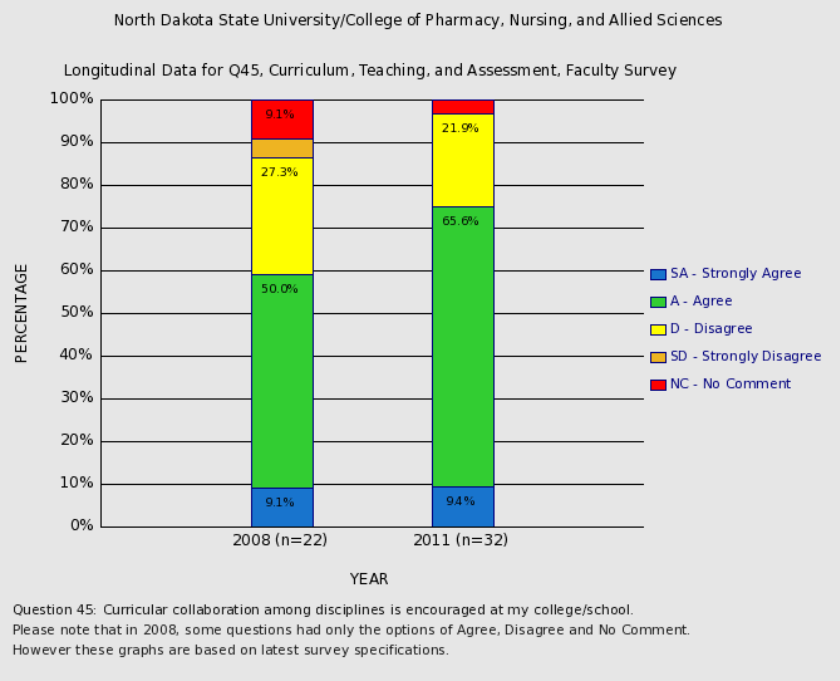
Question 44: The curriculum is taught at a depth that supports understanding of central concepts and principles.
Please note that in 2008, some questions had only the options of Agree, Disagree and No Comment.
However these graphs are based on latest survey specifications.

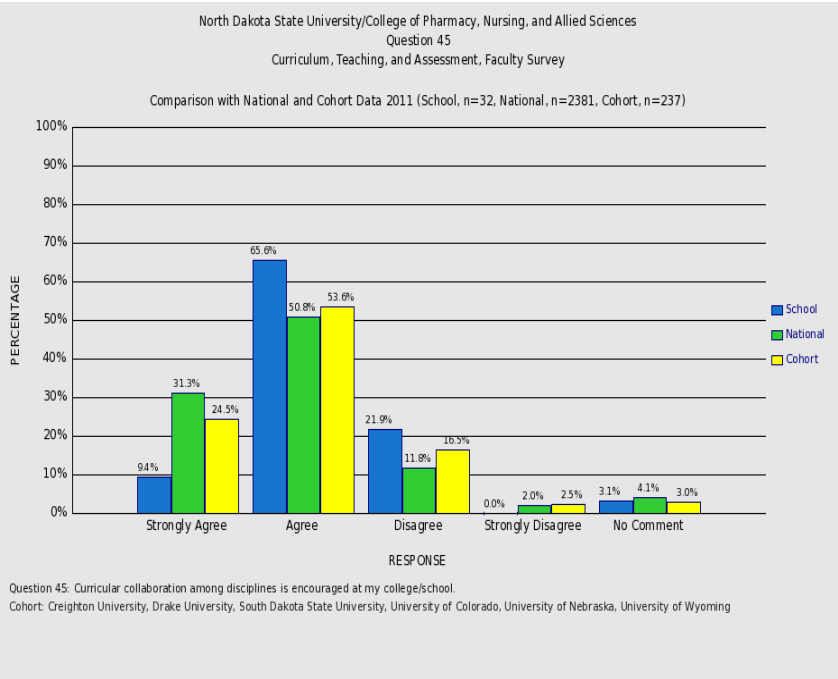


Question 44: The curriculum is taught at a depth that supports understanding of central concepts and principles.
Cohort: Creighton University, Drake University, South Dakota State University, University of Colorado, University of Nebraska, University of Wyoming

Faculty Survey

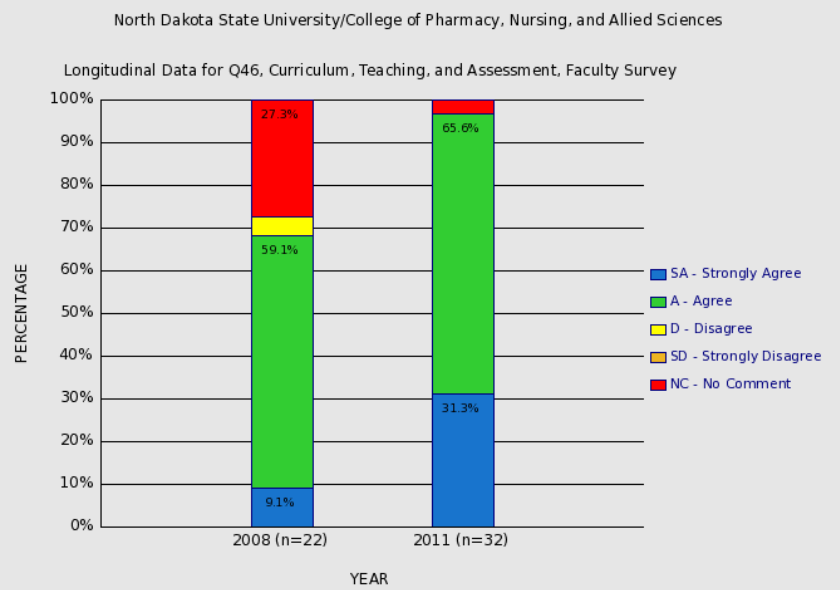
Question: 45. Curricular collaboration among disciplines is encouraged at my college/school.



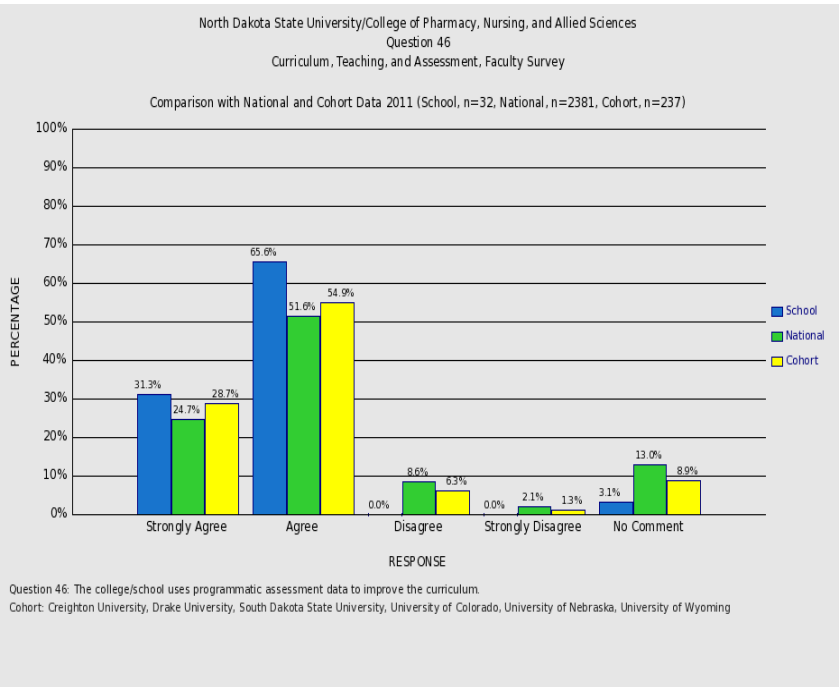


Faculty Survey

Question: 46. The college/school uses programmatic assessment data to improve the curriculum.



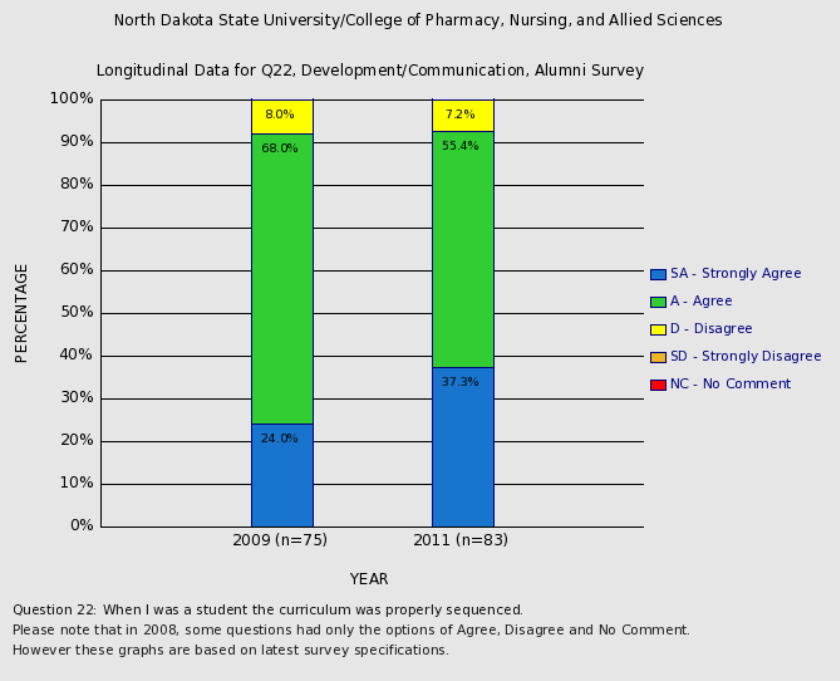
Question 46: The college/school uses programmatic assessment data to improve the curriculum.
Please note that in 2008, some questions had only the options of Agree, Disagree and No Comment.
However these graphs are based on latest survey specifications.

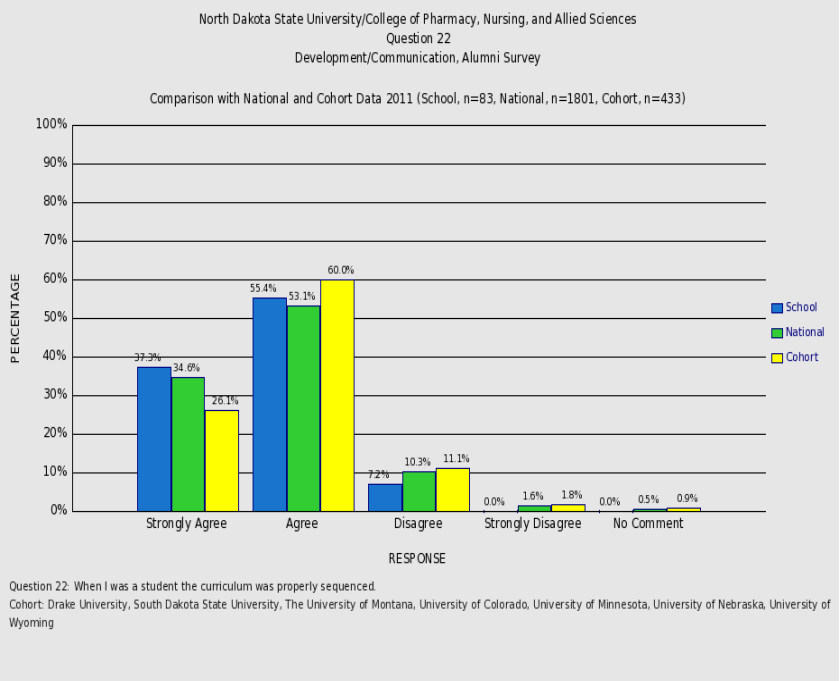


Question 46: The college/school uses programmatic assessment data to improve the curriculum.
Cohort: Creighton University, Drake University, South Dakota State University, University of Colorado, University of Nebraska, University of Wyoming

Alumni Survey

Question: 22. When I was a student the curriculum was properly sequenced.





Alumni Survey

Question: 27. When I was a student pharmacy related elective courses met my needs as a Pharm.D. student.