

Recommendations for Advancing Pharmacy Education in the Democratic Republic of the Congo

August 2014



USAID
FROM THE AMERICAN PEOPLE

SLAPS 
Systems for Improved Access
to Pharmaceuticals and Services

Recommendations for Advancing Pharmacy Education in the Democratic Republic of the Congo

Peter H. Vlasses, PharmD, DSc (Hon), BCPS, FCCP
Executive Director
Accreditation Council for Pharmacy Education (ACPE)
Chicago, Illinois

Jean-Pierre Grégoire, MPH, PhD, FISPE, FCAHS
Professor
Faculté de pharmacie, Laval University, Quebec, Canada

August 2014



This report is made possible by the generous support of the American people through the US Agency for International Development (USAID), under the terms of cooperative agreement number SIAPS-2011-004. The contents are the responsibility of Management Sciences for Health and do not necessarily reflect the views of USAID or the United States Government.

About SIAPS

The goal of the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program is to assure the availability of quality pharmaceutical products and effective pharmaceutical services to achieve desired health outcomes. Toward this end, the SIAPS result areas include improving governance, building capacity for pharmaceutical management and services, addressing information needed for decision-making in the pharmaceutical sector, strengthening financing strategies and mechanisms to improve access to medicines, and increasing quality pharmaceutical services.

Recommended Citation

This report may be reproduced if credit is given to SIAPS. Please use the following citation.

Vlasses, Peter H., and Jean-Pierre Grégoire. 2014. *Recommendations for Advancing Pharmacy Education in the Democratic Republic of the Congo*. Submitted to the US Agency for International Development by the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program. Arlington, VA: Management Sciences for Health.

Key Words

Curriculum, Democratic Republic of Congo, Doctor of Pharmacy, road map

Systems for Improved Access to Pharmaceuticals and Services
Center for Pharmaceutical Management
Management Sciences for Health
4301 North Fairfax Drive, Suite 400
Arlington, VA 22203 USA
Telephone: 703.524.6575
Fax: 703.524.7898
E-mail: siaps@msh.org
Website: www.siapsprogram.org

CONTENTS

Acronyms and Abbreviations	iv
Acknowledgments.....	v
Executive Summary	vii
Introduction.....	vii
Purpose of Trip, Scope of Work, and Key Objectives.....	vii
Activities, Principal Findings, and Accomplishments	viii
Findings.....	ix
Introduction.....	1
Overview of Project	1
Purpose of Visit.....	3
Description of Visit.....	3
Findings.....	5
Primary Purposes	5
Secondary Purpose.....	13
Summary.....	15
Annex A: Consultative Team Itinerary.....	16
Annex B: Outline of the Doctor of Pharmacy Curriculum, Laval University, Quebec, Canada..	19
Annex C: Doctor of Pharmacy Curriculum (Semester-based) offered at Ohio Northern University	29
Annex D: Proposed Ongoing ACPE Consultative Activity	44
Annex E: Faculty of Pharmaceutical Sciences, University of Kinshasa, Summary Report on Answers to Focused Questions (Self-Assessment).....	46
Glossary/Definitions	51

ACRONYMS AND ABBREVIATIONS

AIDS	acquired immunodeficiency syndrome
ACPE	Accreditation Council for Pharmacy Education
CE	continuing education
CPD	continuing professional development
DPharm	Doctor of Pharmacy
DRC	Democratic Republic of the Congo
FIP	International Pharmaceutical Federation
FOPS	Faculty of Pharmaceutical Sciences
HIV	human immunodeficiency virus
MSH	Management Sciences for Health
SIAPS	Systems for Improved Access to Pharmaceuticals and Services
TWG	Technical Work Group
USAID	US Agency for International Development
WHO	World Health Organization

ACKNOWLEDGMENTS

The authors of the review would like to express their gratitude and sincere thanks for the support received and their valuable contribution to this research and report preparation to—

- Systems for Improved Access to Pharmaceuticals and Services Program (SIAPS), implemented by Management Sciences for Health (MSH)
- US Agency for International Development (USAID)
- Dr. Philippe S. K. Tshiteta, MSH Country Representative, Democratic Republic of the Congo Country Project Director, SIAPS, MSH
- Ruphin Mulongo Banana, Deputy Project Director, SIAPS, MSH Democratic Republic of the Congo
- Robert Tuala Tuala, MSH staff, Democratic Republic of the Congo
- Michael J. Rouse B.Pharm (Hons), MPS Assistant Executive Director, Professional Affairs and Director, International Services, Accreditation Council for Pharmacy Education (ACPE)
- Dawn G. Zarembski, PharmD, BCPS, Independent Consultant

Conflict of interest statement: This review was conducted by individuals acting on behalf of ACPE in collaboration with SIAPS. ACPE and MSH are nonprofit organizations. The consultants have no conflict of interest.

EXECUTIVE SUMMARY

Introduction

Management Sciences for Health (MSH) identified the Accreditation Council for Pharmacy Education (ACPE) as one of the partners in the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) program proposal funded by the US Agency for International Development (USAID). ACPE is the national accreditation agency for quality assurance of pharmacy education in the United States. To help foreign countries assess and improve their pharmacy education programs, ACPE through its International Services Program also provides consultative services and certification of education programs that meet ACPE's international quality criteria.

Pharmaceutical services play a critical role in any health system; a 2009 World Health Organization (WHO) report¹ asserts that all the strategies governments and development partners put in place to fight diseases depend on essential medicines. Pharmacists are key health professionals in ensuring that the population has access to quality and safe medicines and that those medicines are used rationally so the limited financial resources available are appropriately used to cover the unlimited health needs of the population. To accomplish this, pharmacists have to be equipped with fundamental knowledge with respect to supply chain management, rational use of medicines, pharmaceutical care provision, pharmacovigilance, and antimicrobial resistance—five key topics of interest for SIAPS.

ACPE previously conducted a survey of pharmacy education and practice issues in low- and middle-income countries identified by MSH as part of the SIAPS program. One of the participants in the survey was the Faculty of Pharmaceutical Sciences (FOPS), University of Kinshasa, the oldest and the main faculty of pharmacy in the Democratic Republic of the Congo (DRC). As a result of the survey, the Faculty expressed interest, with the help of ACPE and SIAPS, in further analysis of areas explored in the survey with a view toward strengthening the pharmacy education program to better meet the public health needs and priorities of the DRC. This was recognized as a high-impact activity for SIAPS in DRC, with the results spinning off on the other three faculties of pharmacy in the country and the National Pharmacy Council, thereby positively affecting pharmacy education and practice in the whole country, including the private sector.

MSH, under Task Order Number 03, under Contract Number SIAPS-2011-004, engaged ACPE to conduct the requested consultation for the FOPS, University of Kinshasa.

Purpose of Trip, Scope of Work, and Key Objectives

The primary purposes of the ACPE consultative visit were—

- To review the curriculum for pharmacy education of the FOPS, University of Kinshasa

- To develop a “road map” for updating and implementing a revised curriculum that meets international standards and prepares pharmacists who can better address public health priorities of the DRC

[Note: As part of the Task Order, the road map also addresses general impressions and recommendations regarding continuing education/continuing professional development (CE/CPD) for pharmacists, especially the preceptors who will be involved in the final year of the revised curriculum.]

The secondary purposes of the ACPE consultative visit were—

- To provide the FOPS, University of Kinshasa, the opportunity to conduct a preliminary self-assessment for program quality improvement using the ACPE international certification criteria
- To provide consultation to the University of Kinshasa FOPS on preparation needed for potential application for ACPE certification in the future

The scope of the five-day visit involved the two ACPE consultants meeting with the working group of the FOPS, University of Kinshasa, as well as many stakeholders. in support of a revised pharmacy education curriculum in the DRC.

The key objectives were—

- To provide a qualified consultation team to address the purposes noted to review the present curriculum with emphasis on the following needs—
 - Improve pharmacist contributions to achievement of health care objectives described in the DRC National Health Development Plan 2011–2015
 - Prepare competent pharmacists in the five MSH key focus areas (rational use of medicines, pharmaceutical care, supply chain management, antimicrobial resistance, pharmacovigilance)
 - Conform to contemporary international pharmacy curricula
- To provide PowerPoint presentations, in English and in French, at the end of the visit that identify the findings of the curricular review, the recommendations for improvement, the proposed road map for curricular revision, and a preliminary assessment of the FOPS, University of Kinshasa, preparation for application for ACPE certification
- To subsequently prepare a technical report on the primary and secondary purposes of the consultative visit for submission to SIAPS

Activities, Principal Findings, and Accomplishments

During the consultative visit, the team met with the Dean, the Technical Work Group (TWG), key ministries, and Pharmacy Council stakeholders. Site visits were conducted at one hospital

and a community pharmacy. Feedback of the evaluation findings was provided to FOPS and MSH teams upon conclusion of the evaluation visit.

The principal findings were determined after discussion with the key stakeholders and a whole-day (Tuesday) review of the pharmacy curriculum on a course-by-course analysis for the third through sixth years of the curriculum (professional education years). The focus of this review was on finding opportunity for improvement in the following areas—

- Health care priorities
 - HIV/AIDS
 - Tuberculosis
 - Malaria
 - Family planning/maternal and child health
 - Chronic disease management (e.g., hypertension, diabetes mellitus, arthritis, cancer)

- Desired content
 - Rational use of medicines
 - Pharmaceutical care
 - Supply chain management
 - Quality of medications
 - Antimicrobial resistance
 - Pharmacovigilance
 - Essential medications
 - Treatment guidelines
 - Adverse drug reaction and drug interaction monitoring
 - Communications with health care professionals and patients

Findings

The current six-year pharmacy curriculum is designed to prepare graduates to practice in three distinct professional areas (% current class choices): community and hospital pharmacy (27%); pharmaceutical industry (57%); and medical biology (16%). Community and hospital preparation varied among the three curricular options and was primarily targeted toward traditional pharmacy services (e.g., product procurement, storage, and dispensing) within each option. The current curriculum provides a strong basic science foundation and the first two years of the curriculum do not require major modification.

Curricular revisions are recommended to adequately prepare all graduates to enter community/hospital pharmacy. The revised curriculum should—

- Clearly state the expected competencies and describe the methods that will be used to assess achievement of the competencies; include didactic, simulation, and practice-based (experiential) education with careful sequencing and integration, achieving the proper balance between basic sciences and pharmacy practice, including the need for new courses

- Not only focus on knowledge acquisition but also emphasize practical application
- Include two years of general education and four years of professional education with the final year being exclusively experiential education
- Result in awarding of a Doctor of Pharmacy (DPharm) degree
- Develop additional master's degree programs to address the competencies needed for practice in industry, medical biology, and other potential specialty practice areas (e.g., natural products)

The consultative team developed a curricular road map that provides a timeline for updating and implementing a revised curriculum that meets international standards and prepares pharmacists who can better address public health priorities of the DRC. The curricular road map addresses the steps needed to develop and implement the revised curriculum from the initial planning stages through graduation of the first class of students. The road map covers academic years 2014 to 2020. The stakeholders involved in the curricular development process and targets for each academic year are outlined.

INTRODUCTION

Overview of Project

Pharmaceutical services play a critical role in any health system. As noted in a 2009 WHO report, essential medicines are the key component of the health care strategies governments and development partners put in place to fight diseases.¹ Pharmacists are key players in ensuring that the population has access to quality and safe medicines. In addition, pharmacists ensure that medicines are used rationally so that the limited financial resources available are appropriately used to cover the unlimited health needs of the population. Patient care provided by pharmacists has been demonstrated to have favorable effects across various patient outcomes, health care settings, and disease conditions.² In low- and middle-income countries, pharmacist-provided services have been demonstrated to improve the quality of life of patients with chronic conditions.³ Pharmaceutical care has been recommended as one means of preventing and treating medical conditions commonly observed in Sub-Saharan Africa.⁴

To improve patient care, pharmacists must be equipped with the fundamental knowledge needed to address the population's health care needs. The expansion of services provided by pharmacists is one of the drivers leading to the transformation of global pharmacy education.⁵ As noted by the International Pharmaceutical Federation (FIP), numerous countries have initiated or completed review and modification of their entry-level curriculum in recent years.⁵ In addition, numerous colleges, schools, and faculties of pharmacy in Africa and worldwide have begun offering the Doctor of Pharmacy degree.⁶

MSH is a global health nonprofit organization committed to improving health care in developing nations. MSH, in collaboration with ACPE, has undertaken projects under the USAID-funding SIAPS program proposal to evaluate pharmacy education in developing countries. ACPE is the national accreditation agency for quality assurance of pharmacy education in the United States. To help foreign countries assess and improve their pharmacy education programs, ACPE through its International Services Program also provides consultative services and certification of education programs that meet ACPE's international quality criteria.

ACPE previously conducted a survey, sponsored by MSH as part of the SIAPS program, to determine the global situation on pharmacy education in developing countries. The survey included questions regarding the practice of pharmacy, pharmacy education, requirements for licensure, and maintenance of licensure within each country. The extent to which the curriculum in each country addressed five key topics of interest for SIAPS (supply chain management, rational use of medicines, pharmaceutical care provision, pharmacovigilance, and antimicrobial resistance) was also evaluated. The findings of this survey indicated that the density of pharmacists and pharmacy support personnel per 10,000 population in the DRC was on the low end of the countries surveyed, thus indicating a need for greater quantitative strength of the pharmaceutical workforce. The majority of pharmacists worked in urban areas with less than 1% practicing in rural areas.⁷ As noted in the survey findings, pharmacists in the DRC typically provide a range of services (table 1).⁷ Although the survey revealed that some curricular topics necessary for the provision of such services were covered extensively, others were covered at the

introductory level only in the bachelor's degree curriculum (e.g., rational use of medicines, pharmacovigilance).

Table 1: Services Provided by Pharmacists in the DRC⁷

Preparing medicines
Dispensing medicines
Providing patient education
Evaluating a patient's medication-related needs
Determining the effectiveness of medication therapy
Recommending changes in medication therapy
Providing drug information to other health care professionals
Determining patient medication compliance
Compounding medicines
Promoting public health

Furthermore, WHO data indicate the need for better health services in the DRC. As noted in the 2012 WHO DRC: Health Profile, life expectancy within the country was considerably below the global average (52 years in DRC compared with 70 years globally) while the under-five mortality rate was higher (146 per 1,000 live births in DRC compared with 48 per 1,000 live births globally). Additional indicators also point to the need for improved care in the management of a number of diseases (table 2).

Table 2: Health Profile of the DRC⁸

Indicator (per 100,000 population)	DRC	Global average
Prevalence of HIV	733	511
Incidence of malaria	25,999	3,752
Prevalence of tuberculosis	576	169

The provision of optimal health care requires that pharmacy education address the full scope of pharmacy workforce responsibilities. In this regard, based on the findings of the prior survey conducted in 2011 by ACPE in conjunction with MSH and SIAPS, the FOPS, University of Kinshasa, the oldest and main school of pharmacy in the DRC, expressed interest in further analysis of the areas explored in the survey with a view to strengthening the pharmacy program to better meet the public health needs and priorities of the DRC. It was recognized that the impact of the consultation with the University of Kinshasa could have additional impact on the

three other faculties of pharmacy in the country and the Pharmacy Council, thereby positively affecting pharmacy education and practice in the whole country.

MSH, under Task Order Number 03, under Contract Number SIAPS-2011-004, engaged ACPE to conduct the requested consultation for FOPS, University of Kinshasa.

Purpose of Visit

The primary purposes of the ACPE consultative visit were—

- To review the curriculum for pharmacy education of the FOPS, University of Kinshasa in DRC
- To develop a “road map” for updating and implementing a revised curriculum that meets international standards and prepares pharmacists that can better address public health priorities of the DRC

[Note: As part of the Task Order, the road map also addresses general impressions and recommendations regarding CE/CPD for the pharmacists, especially the preceptors who will be involved in the final year of the revised curriculum.]

The secondary purposes of the ACPE consultative visit were—

- To provide the FOPS, University of Kinshasa, the opportunity to conduct a preliminary self-assessment for program quality improvement using the ACPE international certification quality criteria
- To provide consultation to the University of Kinshasa FOPS on preparation needed for potential application for ACPE certification in the future

Description of Visit

The evaluation visit was conducted by—

- Peter H. Vlasses, PharmD, DSc (Hon), BCPS, FCCP, Executive Director
ACPE, Chicago, Illinois, USA
- Jean-Pierre Grégoire, MPH, PhD, FISPE, FCAHS, Professor, Faculté de pharmacie,
Laval University, Quebec, Canada

The scope of the five-day consultative visit involved the two ACPE consultants meeting with the working group of the FOPS, University of Kinshasa, as well as many stakeholders in support of a

revised pharmacy education curriculum in the DRC (Annex A). The official launch of the project included representatives from a number of organizations:

- MSH
- USAID
- University of Kinshasa administration
- University of Kinshasa Faculty of Pharmaceutical Sciences
- World Health Organization
- Ministry of Health
- Ministry of Higher Education and Research

The consultative team conducted thorough curriculum review and planning sessions with the University of Kinshasa FOPS. The present curriculum (years 3 to 6) was evaluated on a course-by-course basis to determine the extent to which the desired health care priorities and content were addressed (table 3).

Table 3: Desired Health Care Priorities and Content

Health care priorities	Desired content
HIV/AIDS	Rational use of medicines
Tuberculosis	Pharmaceutical care
Malaria	Supply chain management
Family planning/maternal and child health	Quality of medications
Chronic disease management (e.g., high blood pressure, diabetes mellitus, arthritis, cancer)	Antimicrobial resistance
	Pharmacovigilance
	Essential medications
	Treatment guidelines
	Adverse drug reactions/drug interactions
	Communications with health care professionals and patients

FINDINGS

Primary Purposes

Areas of Strength

The consultative team noted several areas of strength throughout the evaluation process, including the following—

- Willingness and enthusiasm of the members of the Faculty to undertake a curricular revision process in an effort to address needed curricular improvements
- Support expressed by representatives from the Ministry of Higher Education and Research for a competency-based curriculum that addresses Ministry of Health priorities, within their diploma classification framework
- Funding provided by USAID through MSH to support the curricular review, revision, and implementation process
- Support expressed by representatives of the following stakeholder groups for the curricular revision process and their willingness to participate in the process:
 - University of Kinshasa administration
 - Pharmacy Council
 - Ministry of Health/National Drug Regulatory Authority
 - WHO
 - MSH
 - USAID

Curricular Evaluation and Recommendations

The consultative team believes that the current six-year pharmacy curriculum provides a strong basic science foundation, the first two years of which will not require major curricular modifications. The current curriculum is designed to prepare graduates to practice in three distinct professional areas (% current class choices):

- Community and hospital (27%)
- Pharmaceutical industry (57%)
- Medical biology (16%)

Community and hospital preparation varied among the three curricular options and is primarily for traditional pharmacy services (e.g., product procurement, storage, and dispensing) within each option.

The course-by-course analysis indicates significant curricular improvement is needed in the following areas—

- Ensure graduates are prepared to contribute in a meaningful manner to the achievement of health care objectives described in the DRC National Health Development Plan 2011–2015
- Prepare competent pharmacists in the five MSH key focus areas (rational drug use, pharmaceutical care, supply chain management, antimicrobial resistance, and pharmacovigilance)
- Conform to contemporary international pharmacy curricula

A curricular road map is needed to guide the curricular revision and implementation process to ensure that the revised curriculum meets international standards and prepares pharmacists that can better address public health priorities of the DRC.

Furthermore, the revised curriculum should—

- Prepare *all* graduates to enter community/hospital pharmacy
- Encourage the development of self-directed learning skills, professionalism, and legal and ethical professional behaviors
- State expected competencies to be achieved by graduates of the program and how they will be assessed
- Encompass didactic, simulation, and practice-based (experiential) education, with careful sequencing and integration
- Achieve the proper balance between basic sciences and professional courses, including the need for new courses
- Not only focus on knowledge acquisition but also emphasize practical application
- Consist of two years of general education and four years of professional education, with the final year all experiential
- Result in awarding of a DPharm degree

Figure 1 depicts the typical structure and outcomes associated with the proposed Doctor of Pharmacy curriculum. Prior to beginning the professional part of the Doctor of Pharmacy curriculum (years 3 to 6), students complete at least two years of preprofessional courses that involve a mix of the sciences and general education. These courses provide the basis from which the professional pharmacy curriculum builds and ensure the development of a well-rounded pharmacist. The Doctor of Pharmacy curriculum is initially heavily concentrated with biomedical and pharmaceutical sciences courses that provide the foundation for future clinical science courses. Behavioral, social, administrative, and clinical science courses are added as the students progress throughout the first three years of the professional curriculum (years 3 to 5 of

curriculum). Courses within the first three years of the professional curriculum should incorporate a mixture of both didactic teaching and simulation exercises. Formative and summative assessments of students' achievement of competencies should be conducted throughout to ensure students are meeting the goals of the curriculum. The curriculum culminates with the pharmacy practice experiences in actual patient care settings. The goal throughout the curricular process is to develop independent/self-directed lifelong learners upon graduation. In this regard, the curriculum should ensure proper evolution from dependent/directed learners.

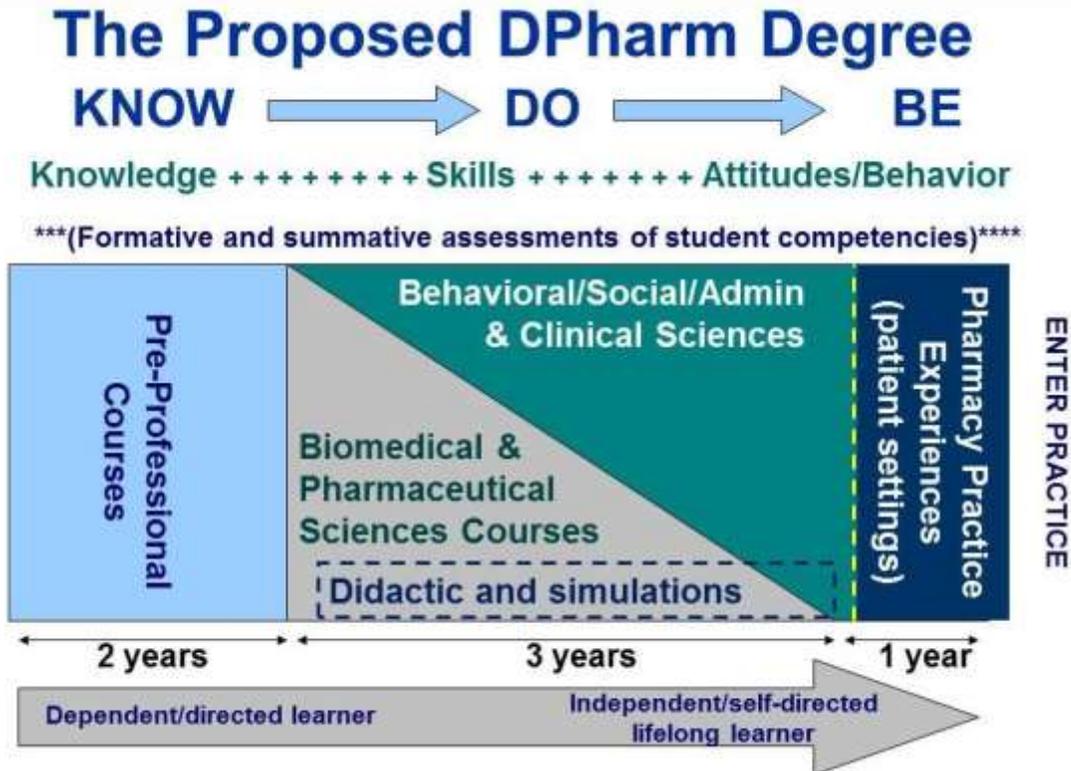
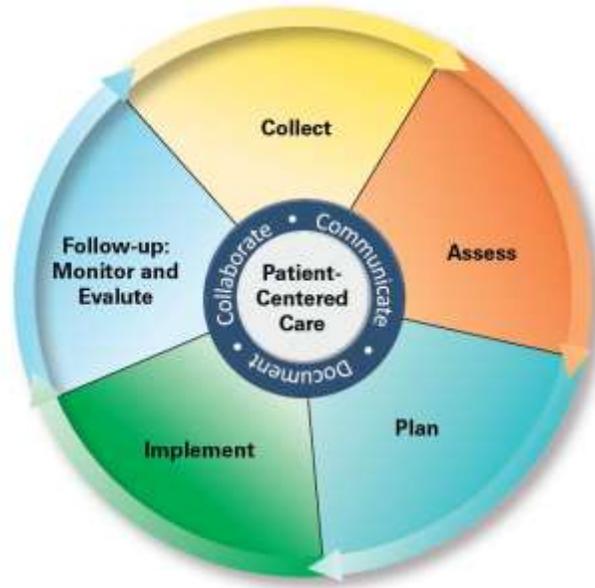


Figure 1: schematic of the proposed Doctor of Pharmacy curriculum

Wherever possible, faculty should be encouraged to use active learning pedagogy.^{9, 10, 11} The development of critical thinking and problem-solving skills using active learning strategies and other high-level pedagogical strategies should be supported throughout the curriculum by faculty and preceptors. Active learning strategies include the application of computer and other instructional technologies, laboratory experiences, case studies, guided small group discussions, simulations, and other practice-based exercises. Where appropriate, these strategies should involve actual or simulated patients, pharmacists, and other health care professionals. In addition, from the earliest stages, the faculty should encourage and assist students to assume responsibility for their own learning.

Faculty should instruct students during the curriculum regarding the use of the “Pharmacists’ Patient Care Process” developed by the Joint Commission of Pharmacy Practitioners.¹² The

Pharmacists Patient Care Process describes a collaborative patient-centered approach designed to optimize patient care outcomes. Utilizing the Pharmacists' Patient Care Process, pharmacists establish a relationship with patients while collaborating, documenting and communicating with physicians and other members of the health care team.



Used with permission.

Figure 2: The Pharmacists' Patient Care Process¹²

Consistent with the “Pharmacists’ Patient Care Process,” pharmacists use principles of evidence-based practice to—

- **Collect:** collect needed subjective and objective information from the patient or caregiver in an effort to understand the relevant medical history and clinical status of the patient.
- **Assess:** assess the information collected and analyze the clinical effects of the patient’s therapy given the context of the patient’s overall health goals in an effort to identify and prioritize problems and optimize care.
- **Plan:** develop an evidence-based, cost-effective care plan that is individualized and patient centered. The plan is developed in collaboration with other health care professionals and the patient or caregiver.
- **Implement:** implement the care plan in collaboration with other health care professionals the patient and/or caregiver.

- **Follow-up and Evaluate:** monitor and evaluate the effectiveness of the care plan. Modifications are made as needed, in collaboration with other health care professionals, the patient, and/or the caregiver.

Additional Recommendations

Development of New Master's Degree Programs

The need for DRC pharmacists in industry, medical biology, and other potential specialty practice areas (e.g., natural products) should be addressed through development of master's degree programs that focus on the needed competencies. Courses in the present curriculum should be evaluated to ascertain their contribution to achieving the desired competencies, how they could be improved for this purpose, and in which year of study they would be best sequenced. Courses related to industry and medical biology should be evaluated to determine if they best belong in the DPharm or master's curriculum.

Continuing Education for Practicing Pharmacists to Achieve, Maintain, and Enhance the Competencies of the Revised Curriculum

The stakeholders agreed on the importance of the FOPS providing continuing education for practicing pharmacists to achieve, maintain, and enhance the competencies of the revised curriculum. The FOPS is encouraged to work with pharmacists, especially those selected to serve as preceptors in the curriculum, to assist them in the development of their practice settings in an effort to advance the level of practice in the country. Advanced practice sites will be essential to for the experiential education component of the curriculum. Data obtained from the ACPE/MSH survey of developing countries indicated that pharmacists do not have to maintain or renew their registration/license after the initial registration.⁷ Furthermore, CE was not noted to be a requirement for pharmacists to maintain their license/registration. The FOPS is encouraged to work with other pharmacy stakeholders in the DRC to develop a nationally regulated and quality assured/accredited system of CE/CPD. The FOPS is encouraged to consult the publication *Establishing Accreditation Programs for Continuing Pharmaceutical Education and Training in Low- and Middle-Income Countries*, developed by ACPE in collaboration with SIAPS and currently in publication, for guidance regarding the development, provision, and quality assurance/accreditation of CE/CPD activities.

Experiential Component of the Curriculum

In planning the experiential component of the curriculum, the following elements will need to be considered—

- Recruitment of an adequate number of quality community and hospital training sites
- Criterion No. 18 Pharmacy Practice Sites and Preceptors of ACPE's International Quality Criteria for Certification of Professional Degree Programs in Pharmacy
- Recruitment of qualified preceptors and the continuing education needed to develop in

them:

- The desired competencies
 - Their ability to mentor and assess pharmacy students
- The addition of practice experiences in rural health care settings

Road Map for Updating and Implementing a Revised Curriculum

The curricular road map provides a timeline for updating and implementing a revised curriculum that meets international standards and prepares pharmacists who can better address public health priorities of the DRC.

Year 1: Academic Year 2014–2015	
Target 1	A curriculum committee provides a consensus (faculty, DRC stakeholders, and consultants) revision to the university for implementation starting in 2016–2017. The dean appoints a curriculum committee, accountable to the Faculty Council, which is— <ul style="list-style-type: none"> ● Composed of a maximum of eight faculty members, with representation from each department and the management of experiential learning ● Administratively supported by MSH ● Charged to revise the curriculum (primarily focusing on years 3 to 6) by implementing the recommendations of the ACPE consultants ● Supported with periodic advice on drafts of the curriculum revision from DRC stakeholders and ACPE consultants
Target 2	A Curriculum Transition Plan for the implementation of the revised curriculum is developed by the dean and his executive team and presented to the university. The Curriculum Transition Plan will include— <ul style="list-style-type: none"> ● A year-by-year description of the courses to be offered during the transition to students in the new curriculum and those students in the current curriculum. The plan will include provide examples of proposed modifications within courses relevant to the new desired competencies. ● An analysis of teaching and practice sites/preceptors, financial and physical resources needed to implement the transition. ● Review and input from MSH and the ACPE consultants.
Year 2: Academic Year 2015–2016	
Target 1	University approves the revised pharmacy curriculum and submits it to the Ministry of Higher Education and Research for approval.
Target 2	Ministry of Higher Education and Research approves the revised curriculum.
Target 3	Seminars on modern pedagogical development are conducted for faculty members to allow incorporation in the delivery of the revised curriculum.
Target 4	The pharmacy faculty members prepare the new or revised syllabi for the third and fourth-year courses that identify student learning objectives, pedagogical method(s) and assessments of student learning, with review by the curriculum committee, MSH and ACPE consultants.
Target 5	The dean appoints a master’s curriculum committee to plan the development and implementation of programs for industrial and medical biology career preparation.

Findings

Year 3: Academic Year 2016–2017	
Target 1	The revised pharmacy curriculum is launched for the third-year students for this and subsequent years.
Target 2	Formative assessment of third-year students is undertaken to identify individuals with academic difficulties in the new curriculum courses. Faculty advising and tutoring are undertaken where needed.
Target 3	The pharmacy faculty members prepare new or revised syllabi for the fifth and sixth-year courses that identify student learning objectives, pedagogical method(s) and assessments of student learning, with review by the curriculum committee, MSH and ACPE consultants.
Target 4	The faculty submits the master's curricula for industrial and medical biology career preparation (and other identified specialty areas) to the university for approval.
Target 5	The university approves the master's curricula and submits them to the Ministry of Higher Education and Research for approval.
Target 6	The Ministry of Higher Education and Research approves the master's curricula.
Year 4: Academic Year 2017–2018	
Target 1	The revised pharmacy curriculum is implemented for the fourth-year pharmacy students.
Target 2	Formative assessment of fourth-year students is undertaken to identify individuals with academic difficulties in the new curriculum courses Faculty advising and tutoring are undertaken as appropriate.
Target 3	The curriculum committee assesses the initial experience with the third-year curriculum (formative and summative measures) and identifies potential quality improvements for the second cohort of students, with input from MSH and ACPE consultants.
Target 4	The master's curricula for industrial and medical biology (and other identified specialty areas) career preparation are launched.
Target 5	Quality practice site and preceptor resources for the sixth-year curriculum are being identified, based on the development and adoption of quality selection criteria.
Target 6	Continuing education of preceptors is initiated.
Year 5: Academic Year 2018–2019	
Target 1	The revised pharmacy curriculum is implemented for the fifth-year pharmacy students.
Target 2	Formative assessment of fifth-year students is undertaken to identify individuals with academic difficulties in the new curriculum courses. Faculty advising and tutoring are undertaken as appropriate.
Target 3	The curriculum committee assesses the initial experience with the fourth-year curriculum (formative and summative measures) and identifies potential quality improvements for the second cohort of students, with input from MSH and ACPE consultants.
Target 4	Quality practice site and preceptor resources for the sixth-year curriculum continue to be identified and continuing education of preceptors continues.

Target 5	ACPE consultants conduct an on-site assessment of (a) progress in the new curriculum implementation in concert with MSH and DRC stakeholders and (b) preparedness for the launch of the sixth-year curriculum.
Year 6: Academic Year 2019–2020	
Target 1	The revised pharmacy curriculum is implemented for the sixth-year pharmacy students.
Target 2	Formative assessment of sixth-year students by preceptors is undertaken to identify individuals with difficulties in competency demonstration and faculty advising and tutoring are undertaken.
Target 3	The curriculum committee assesses the initial experience with the fifth-year curriculum (formative and summative measures) and identifies potential quality improvements for the second cohort of students, with input from MSH and ACPE consultants.
Target 4	Quality practice site and preceptor resources for the sixth-year curriculum continue to be identified and continuing education of preceptors continues.
Target 5	Overall assessment of the implementation of the revised curriculum is conducted by the curriculum committee, with input from DRC stakeholders, MSH and ACPE consultants.

Additional insight and curricular recommendations may be found by reviewing the doctor of pharmacy curriculum offered at other colleges, schools, or faculties of pharmacy. Annex B provides a description of the curriculum of Laval University, Quebec, Canada (in French only), while Annex C provides a description of the curriculum used at Ohio Northern University, a representative doctor of pharmacy program in the United States (in English only). The ACPE website (www.acpe-accredit.org) provides access to the websites of all the accredited (U.S.) or certified (international) doctor of pharmacy degree programs for further analysis by the FOPS during its curricular revision process. Of note, these curricula are offered as a guide, but they have been developed to address the specific public health needs of the respective country. The curricular revision to be undertaken by the University of Kinshasa FOPS must focus on the desired health care priorities and content provided in table 3 of this report.

Future ACPE Involvement in the Curricular Revision/Development Process

Based on prior experiences, ACPE believes that a project to transform the pharmacy degree program at the FOPS, University of Kinshasa, is a medium- to long-term project. The long-term success of the project will require commitment from the Faculty and key stakeholders. ACPE is available for further consultation as the curricular revision/development process proceeds (Annex D). ACPE feedback on the curricular revision process, including development of course syllabi, can be instrumental to ensuring the project remains focused and its timelines are achieved.

One additional ACPE consultative visit is recommended during the second half of the third professional year (year 3 of the new curriculum, fifth overall year of study) to assess student readiness to begin experiential practice, assess the quantitative and qualitative adequacy of experiential sites and preceptors, and provide a comprehensive assessment of the curriculum and program. During the consultative visit, members of the FOPS expressed interest in an additional

consultative visit during the second year of curricular implementation (years 4 of 6 of the curriculum). ACPE is available for such additional consultative visits should they be requested by the FOPS and agreeable to USAID and MSH. Budgetary planning should take such additional visits into consideration (Annex D). Should the FOPS consider pursuing certification by ACPE the program is encouraged to review the *Certification Quality Criteria and Certification Policies and Procedures* that are available on the ACPE website to ensure overall compliance with the requirements for certification.

Secondary Purpose

Self-Assessment Evaluation

The University of Kinshasa FOPS conducted an accelerated and abbreviated self-assessment of the current curriculum compared with the ACPE Certification Quality Criteria. The comprehensiveness of the self-study was limited because of the short notice given for the consultative visit needed to achieve the primary purpose. The self-assessment was provided in more detail in French (French version only) and a summary provided in English (English version only, Annex E). The self-assessment was primarily descriptive, lacking the needed documentation and data for a comprehensive external review. A more comprehensive response to the Certification Quality Criteria would be needed before application for ACPE certification could be considered.

Recommendations for Addressing Selected ACPE Quality Criteria

<p>Criterion No. 1: Mission, Goals, and Values</p> <p>The FOPS needs to develop, in collaboration with key stakeholders, its own mission, goals, and values that are in line with those of the university.</p> <p>The mission and goals should address the need to upgrade pharmacy education, pharmacy practice, and the patient-focused role of the pharmacist in the DRC.</p> <p>The new mission and goals should be the basis for strategic planning and program assessment.</p>
<p>Criterion No. 2: Planning and Continuous Quality Improvement</p> <p>The FOPS, in collaboration with key DRC stakeholders, needs to develop a strategic plan and a program assessment plan.</p> <p>The strategic plan should address short-term (e.g., three to five years) strategic goals and objectives that are key to the advancement of all aspects of FOPS's goals. In general, strategic planning should—</p> <ul style="list-style-type: none"> • Be continuous, with systematic broad-based reflection and revision as needed to meet educational needs and the needs of the Faculty • Consider the use of external facilitators • Strive for awareness of and commitment to the strategic plan by key stakeholders • Be based on examination of present and projected environmental, professional, and Faculty factors • Assess strengths, weaknesses, opportunities, and threats relevant to the Faculty • Be aligned with the university's strategic plan • Be consistent with the Faculty's mission statement, goals, and values • Prioritize the strategic goals, objectives and actions • Define measurable outcomes and the processes to assess achievement of the goals

- Establish achievable timelines
- Identify the resources (faculty, staff, preceptors, technical, financial, physical) that need to be allocated
- Designate responsibilities to appropriate individuals or groups
- Include an ongoing mechanism for monitoring, evaluating, and documenting progress in achieving goals and objectives of the strategic plan

The program assessment plan should reflect a commitment to quality improvement through a continuous and systematic process of assessment and evaluation covering all aspects of the Faculty's mission and goals. The plan must be evidence based and embrace the principles and methodologies of continuous quality improvement. The evaluation plan and the specific assessments should be reviewed for completeness, appropriateness, and effectiveness by internal and external stakeholders on an ongoing basis, in a defined manner. In general, the evaluation plan should describe the—

- Desired outcomes of the Faculty's mission and goals
- Process and outcome assessments that will be evaluated and with what frequency
- Individual(s) responsible for data collection, analysis, and dissemination
- Parties that will be responsible to receive and be authorized to act on the findings
- Manner by which resultant changes (e.g., revisions in the curriculum, modifications of faculty and student policies and procedures) will be implemented, evaluated, documented and communicated
- Resources (such as, faculty, staff, preceptors, technical, financial, and physical) needed for successful implementation.

Criterion No. 16: Physical Facilities

Based on the tour of the facilities by the ACPE consultants, major improvements and preferably a new facility would be needed before the criterion could be satisfactorily addressed.

Criterion No. 18: Practice Sites and Preceptors

To address the needs of the curricular revision recommended by the ACPE consultants, a great expansion of practice site and preceptor capacity will be needed before the criterion could be satisfactorily addressed.

A curriculum for preceptor education/development will need to be developed and implemented.

Criterion No. 19: Financial Resources

An assessment of the adequacy of the financial resources is needed to address the recommendations by the ACPE consultants regarding curricular revision and needs for meeting other key certification criteria related to the educational and research programs.

The needed additions in financial support should be identified and provided.

SUMMARY

ACPE, with funding support provided by USAID through MSH, conducted an evaluation of the pharmacy curriculum at the Faculty of Pharmaceutical Sciences, University of Kinshasa, in response to an interest of the FOPS in strengthening its pharmacy program. Two consultants met with members of the FOPS and other stakeholders and conducted an evaluation of the Faculty's physical facilities. The consultative team's findings include the provision of a strong basic science foundation with major revisions not needed in the first two years of the curriculum. Significant curricular revisions would be needed to ensure that pharmacist graduates are adequately prepared to contribute in a significant manner to the achievement of health care objectives described in the DRC National Health Development Plan 2011–2015. Guidance on how to proceed with the curricular revision was provided, including a detailed implementation road map.

ACPE thanks MSH and USAID for the opportunity to provide this consultation. The consultants believe implementation of our recommendations will better allow pharmacists to collaborate in improving patient and public health in the DRC.

ANNEX A: CONSULTATIVE TEAM ITINERARY

The final schedule of activities for the consultative visit was as follows—

Monday, July 14: Official launch session (morning)* and meeting with Technical Work Group (TWG) (afternoon); * Dr. Vlasses could not attend due to air travel delays.

Tuesday, July 15: Meeting with the dean and TWG at the Faculty of Pharmaceutical Sciences.

Wednesday, July 16: Visits at one hospital and a community pharmacy (morning) and meeting with key ministries and Pharmacy Council stakeholders (lunch and meeting); consultants initiated work on findings and recommendations.

Thursday, July 17: Evaluation report writing at MSH office and draft presentation to MSH and USAID staff and modifications based on feedback.

Friday, July 18: Feedback of evaluation findings and recommendations to Faculty and MSH teams (morning) and travel back to United States and Canada (afternoon).

The stakeholders who attended the various meetings during the week included DRC representatives from—

- MSH
- USAID
- University of Kinshasa administration
- University of Kinshasa Faculty of Pharmaceutical Sciences
- World Health Organization
- Ministry of Health
- Ministry of Higher Education and Research

The principal findings were determined after discussion with the key stakeholders and a whole day (Tuesday) review of the pharmacy curriculum on a course-by-course analysis for the third through sixth years of the curriculum (professional education years).

Name	Title	Organization/Affiliation
Present during the official launch		
M. Mwangu	Minister of Higher Education	Government/Ministry of Higher Education
Baitsura	Minister of Health (Representative)	Government/Ministry of Health
J. Cabore	WHO Representative	United Nations/WHO
C. Ricco	USAID Representative	US Government/USAID
P. Kanyangokote	Vice Rector	University of Kinshasa
T. Kikuni	Dean, Faculty of Pharmacy	University of Kinshasa/Faculty of Pharmaceutical Sciences

Name	Title	Organization/Affiliation
Meetings with other technical officials		
Bushabu	Ministry Counselor	Government/Ministry of Higher Education
E. Kabuya	Director of Department of Planning and Studies	Government/Ministry of Higher Education
P. Musoso	Director of Permanent Commission for Studies	Government/ Ministry of Health
D. Ngeleka	Director of Department of Pharmacy and Medicines	Government/Ministry of Health
C. Uteji	Officer In-charge Quality Assurance Department of Pharmacy and Medicines	Government/ Ministry of Health
L. Chandende	President of National Pharmacy Council	Pharmacy Council
Mazombo	President of Regional Pharmacy Council (Kinshasa Region)	Pharmacy Council

TWG Members (Professors, Faculty of Pharmaceutical Sciences)	
Name	Faculty Department
D.B. Phongi	Medicinal Chemistry and Pharmacognosy
K. Dihuidi	Pharmaceutics and Analysis
K.T. Dibungi	Medicinal Chemistry and Pharmacognosy
K. Kule Kule	Biopharmaceutical Sciences and Food Analysis
M. Tsoho	Biopharmaceutical Sciences and Food Analysis
M.T. Mbay	Biopharmaceutical Sciences and Food Analysis
M. Kapundu	Medicinal Chemistry and Pharmacognosy
N. Di Panzu	Biopharmaceutical Sciences and Food Analysis
N. Mpasi	Basic Sciences
T. Kikuni	Biopharmaceutical Sciences and Food Analysis
T. Vemba	Pharmaceutics and Analysis
T. Lutete	Therapeutic and Pharmacology
L. Nzunzu	Medicinal Chemistry and Pharmacognosy
O. Onya	Pharmaceutics and Analysis
O. Kasongo	Biopharmaceutical Sciences and Food Analysis
K. Malongo	Medicinal Chemistry and Pharmacognosy
M. Kuhunu	Therapeutic and Pharmacology
M. Nsengu	Basic Sciences
N. Kabamba	Medicinal Chemistry and Pharmacognosy
M. Wambale	Biopharmaceutical Sciences and Food Analysis
C. Kanyanga	Medicinal Chemistry and Pharmacognosy
T. Kantola	Biopharmaceutical Sciences and Food Analysis
L. Manzo	Therapeutic and Pharmacology
L. Iyamba	Biopharmaceutical Sciences and Food Analysis
N. Manga	Therapeutic and Pharmacology
M. Bondo	Pharmaceutics and Analysis

Qualifications and experience of the consultants:

Peter H. Vlasses, PharmD, DSc (Hon.), BCPS, FCCP, is Executive Director of the Accreditation Council for Pharmacy Education (ACPE), Chicago, Illinois, United States. Dr. Vlasses received his bachelor of science and doctor of pharmacy degrees from the Philadelphia College of Pharmacy and Science (PCPS) and served a residency in hospital pharmacy at Thomas Jefferson University Hospital in Philadelphia, Pennsylvania. His professional experience includes service as a clinical faculty member at The Ohio State University College of Pharmacy and PCPS. He served as head of the Clinical Research Unit and research associate professor of medicine and pharmacology, Jefferson Medical College, in Philadelphia, and then as associate director, Clinical Practice Advancement Center, and director, Clinical Research & Investigator Services, University HealthSystem Consortium, Oak Brook, Illinois. In each of his positions, Dr. Vlasses was involved in innovative education, practice, and research initiatives. Dr. Vlasses is a founding member, fellow and past president of the American College of Clinical Pharmacy (ACCP). His awards include the Russell R. Miller Award from ACCP in recognition of his sustained and outstanding contributions to the biomedical literature, the ACCP Service Award, the PCPS Alumnus of the Year Award, and an Honorary Doctor of Science degree from Mercer University, Atlanta, Georgia. Dr. Vlasses is a Board Certified Pharmacotherapy Specialist, an ACCP Fellow, and a Member of the National Academies of Practice. He was elected to the board of directors of the Association of Specialized and Professional Accreditors and has served as chair and then treasurer of the board. He serves on the National Advisory Council for the National Center for Interprofessional Practice and Research.

Jean-Pierre Grégoire, B. Pharm, MSc, M.P.H., Ph.D., F.I.S.P.E., F.C.A.H.S, is professor and a former dean (2006–2011) at the Faculty of Pharmacy at Laval University in Quebec City, Canada. He is also a scientist with the Laval University Chair on adherence to treatments at the CHU de Québec Research Center. Professor Grégoire is a former president of the Quebec Order of Pharmacists (1993–1995) and of the Canadian Council for the Accreditation of Pharmacy Programs (2000). He was a consultant for the World Health Organization Action Programme for Essential Drugs. Professor Grégoire is on the Evaluation Commission of the Conférence des Doyens de Facultés de Pharmacie d’expression Française (CIDPHARMEF). In addition, he led CIDPHARMEF external evaluations of faculties of pharmacy in France, Africa, and Asia. He is a Fellow of the International Society for Pharmacoepidemiology and of the Canadian Academy of Health Sciences. In recent years, his research has focused on the optimization of drug use in chronic diseases such as hypertension, heart failure, diabetes, and schizophrenia. He has published extensively on the issue of nonadherence to drug treatments.

ANNEX B: OUTLINE OF THE DOCTOR OF PHARMACY CURRICULUM, LAVAL UNIVERSITY, QUEBEC, CANADA

Programme d'études - Connaissances et habiletés

Liste des cours et domaines touchés

Activités de formation communes (108 crédits)

Sigle-Numéro	Titre	Sciences biologiques	Sciences pharmaceutiques	Sciences socio-économiques et du comportement	Sciences cliniques	Pratique pharmaceutique
PHA-1011	Méthodologie pour les études en pharmacie					x
PHA-1012	L'exercice de la pharmacie			x		x
PHA-1013	Les sciences biologiques	x				
PHA-1014	Introduction à la pharmacologie		x		x	x
PHA-1015	La technologie pharmaceutique		x			x
PHA-1016	Les produits non stériles		x	x		x
FIS-2001	Collaboration interprofessionnelle centrée sur la personne II : Le travail en équipe : une forme de collaboration à exploiter					
PHA-1021	La consultation			x		x
PHA-1022	Les médicaments du système nerveux I et les médicaments du système musculo-squelettique I	x	x		x	
PHA-1023	Les médicaments du système digestif I	x	x		x	

Recommendations for Advancing Pharmacy Education in the Democratic Republic of the Congo

Sigle-Numéro	Titre	Sciences biologiques	Sciences pharmaceutiques	Sciences socio-économiques et du comportement	Sciences cliniques	Pratique pharmaceutique
PHA-1024	Les médicaments du système respiratoire I et les médicaments des organes sensoriels I	x	x		x	x
PHA-1025	Les services professionnels restreints I					x
PHA-1031	Les médicaments en dermatologie I et les médicaments du système génito-urinaire I	x	x		x	x
PHA-1032	Les services professionnels restreints II					x
PHA-1034	Rendre compte débutant					x
PHA-2041	Le devenir du médicament dans l'organisme		x		x	
PHA-2042	L'environnement interne d'une pharmacie I			x		
PHA-2043	Les anti-infectieux I	x	x		x	
PHA-2044	Les préparations systémiques hormonales et les médicaments du sang I	x	x		x	
PHA-2045	Les médicaments du système cardio-vasculaire I	x	x		x	
PHA-2046	L'intervention en situation simple I			x	x	x
PHA-2051	L'environnement interne d'une pharmacie II			x		
PHA-2052	Les médicaments du système nerveux II et les médicaments du système musculo-squelettique II	x	x		x	
PHA-2053	Les médicaments du système digestif II	x	x		x	

Annex B

Sigle-Numéro	Titre	Sciences biologiques	Sciences pharmaceutiques	Sciences socio-économiques et du comportement	Sciences cliniques	Pratique pharmaceutique
PHA-2054	Les médicaments des organes sensoriels II	x	x		x	
PHA-2055	L'intervention en situation simple II			x	x	x
PHA-2061	L'environnement interne d'une pharmacie III			x		
PHA-2062	Les médicaments du système respiratoire II	x	x		x	
PHA-2063	Les médicaments du système génito-urinaire II et les hormones sexuelles	x	x		x	
PHA-2064	L'intervention en situation simple III			x	x	x
PHA-2066	Rendre compte novice					x
PHA-2071	Introduction à la pharmaco génomique et à la biotechnologie pharmaceutique	x	x			
PHA-2072	L'environnement externe de la pratique I			x		
PHA-2073	Les antinéoplasiques, les agents immunomodulants et les modulateurs de la réponse biologique	x	x		x	
PHA-2074	Les médicaments du système nerveux III	x	x		x	
PHA-2075	Les médicaments du sang II	x	x		x	
PHA-2076	Les anti-infectieux II	x	x		x	
PHA-2077	Les services professionnels développés I			x	x	x

Recommendations for Advancing Pharmacy Education in the Democratic Republic of the Congo

Sigle-Numéro	Titre	Sciences biologiques	Sciences pharmaceutiques	Sciences socio-économiques et du comportement	Sciences cliniques	Pratique pharmaceutique
PHA-2081	Les produits stériles		x			x
PHA-2082	L'environnement externe de la pratique II			x		
PHA-2083	Les médicaments du système cardio-vasculaire II	x	x		x	
PHA-2084	Les services professionnels développés II			x	x	x
PHA-2091	Les médicaments du système digestif III	x	x		x	
PHA-2092	Les médicaments en dermatologie II	x	x		x	
PHA-2093	Les services professionnels développés III					x
PHA-2095	Rendre compte intermédiaire					x
FIS-4101	Collaboration interprofessionnelle centrée sur la personne I			x	x	x
FIS-2001	Collaboration interprofessionnelle centrée sur la personne II			x	x	x
FIS-4002	Collaboration interprofessionnelle centrée sur la personne III			x	x	x
PHA-3011	Les références scientifiques			x		x
PHA-3024	Les situations complexes					x
PHA-3025	La gestion des médicaments et ses enjeux			x		

Annex B

Sigle-Numéro	Titre	Sciences biologiques	Sciences pharmaceutiques	Sciences socio-économiques et du comportement	Sciences cliniques	Pratique pharmaceutique
PHA-3026	Projet d'exploration II			x		x
PHA-3027	Rendre compte compétent					x

**Activités de formation spécifiques –
Connaissances, habiletés et expériences pratiques
(12 crédits parmi les suivants selon cheminement)**

Sigle-Numéro	Titre	Sciences biologiques	Sciences pharmaceutiques	Sciences socio-économiques et du	Sciences cliniques	Pratique pharmaceutique
PHA-3112	Module 13 d'apprentissage en milieu professionnel (connexe à la pharmacie)			X		X
PHA-3113	Module 14 d'apprentissage en milieu professionnel (non traditionnel)			X		X
PHA-2101	Projet hors Québec en pharmacie I			X		X
PHA-1152	Préparation à un projet international			X		
PHA-1151	Initiation à la recherche			X		
PHA-2171	Stage de recherche I					
PHA-3110	Stage de recherche II					
PHA-3111	Projet d'exploration I			X		X

Domaines et contenu du programme d'études – Expériences pratiques

Activités de formation communes (35 crédits)

Sigle-Numéro	Titre	Sciences biologiques	Sciences pharmaceutiques	Sciences socio-économiques et du comportement	Sciences cliniques	Pratique pharmaceutique
PHA-1026	Module 1 d'apprentissage en milieu professionnel					x
PHA-1033	Module 2 d'apprentissage en milieu professionnel					x
PHA-2047	Module 3 d'apprentissage en milieu professionnel					x
PHA-2056	Module 4 d'apprentissage en milieu professionnel					x
PHA-2065	Module 5 d'apprentissage en milieu professionnel					x
PHA-2078	Module 6 d'apprentissage en milieu professionnel					x
PHA-2085	Module 7 d'apprentissage en milieu professionnel					x
PHA-2086	Module 8 d'apprentissage en milieu professionnel					x
PHA-2094	Module 9 d'apprentissage en milieu professionnel					x
PHA-3001	Module 10 d'apprentissage en milieu professionnel					x

Recommendations for Advancing Pharmacy Education in the Democratic Republic of the Congo

Sigle-Numéro	Titre	Sciences biologiques	Sciences pharmaceutiques	Sciences socio-économiques et du comportement	Sciences cliniques	Pratique pharmaceutique
PHA-3002	Module 11 d'apprentissage en milieu professionnel					x
PHA-3012	Module 12 d'apprentissage en milieu professionnel					x
PHA-3021	Module 15 d'apprentissage en milieu professionnel					x
PHA-3022	Module 16 d'apprentissage en milieu professionnel					x
PHA-3023	Module 17 d'apprentissage en milieu professionnel					x

Sciences biomédicales:

Anatomie, biochimie, immunologie, microbiologie, biologie moléculaire et cellulaire, physiologie et physiopathologie

Sciences pharmaceutiques:

Chimie médicinale, de la pharmacologie, de la toxicologie, de la galénique (comprenant les principes physiques/chimiques des formes pharmaceutiques et des systèmes d'administration des médicaments), de la biopharmacie, de la pharmacocinétique et de la biotechnologie pharmaceutique

Sciences comportementales et socio-économiques et les sciences administratives:

Biostatistiques, l'épidémiologie, l'économie du domaine de la santé, la pharmacoéconomie, la profession de pharmacien, les normes de pratique professionnelles et éthiques, la diversité culturelle, les systèmes de soins de santé, la gestion de la profession et de la pratique

Sciences cliniques:

Pharmacocinétique clinique, médecines alternatives et complémentaires, abus et dépendance aux médicaments, médicaments et grossesse, premiers soins d'urgence, gériatrie, promotion de la santé et prévention des maladies, immunisation, technologies de l'information et outils de support à la pratique, administration des médicaments, nutrition, pédiatrie, loi et règlements sur la pharmacie, pharmacothérapie, rôle du pharmacien en santé publique, rôle du pharmacien dans les soins de première ligne, emploi sécuritaire des médicaments par le patient ainsi que automédication et usage des médicaments de vente libre.

Pratique pharmaceutique:

Pharmacocinétique clinique, la gestion des médicaments en collaboration avec les autres professionnels de la santé, les médecines complémentaires et alternatives, la formulation des médicaments, les centres de tests médicaux et diagnostiques, la délivrance d'ordonnance, la gestion des maladies, les drogues d'abus et de dépendance, l'information médicamenteuse incluant l'évaluation de la littérature basée sur les preuves, les médicaments pendant la grossesse, les soins d'urgence, la prise de décision, la gériatrie, la promotion de la santé et la prévention des maladies, l'immunisation, les technologies de l'information et le support technologique à la pratique, l'administration des médicaments, la nutrition, la pédiatrie, la prise en charge des patients et leur évaluation, les communications avec le patient et les professionnels, les dossiers- patients et leur documentation, la loi et les règlements en pharmacie, la pharmacothérapie, l'évaluation physique, l'autorité prescriptive, et l'automédication.

Sciences biomédicales:

Anatomie, biochimie, immunologie, microbiologie, biologie moléculaire et cellulaire, physiologie et physiopathologie

Sciences pharmaceutiques:

Chimie médicinale, de la pharmacologie, de la toxicologie, de la galénique (comprenant les principes physiques/chimiques des formes pharmaceutiques et des systèmes d'administration des médicaments), de la biopharmacie, de la pharmacocinétique et de la biotechnologie pharmaceutique

Sciences comportementales et socio-économiques et les sciences administratives:

Biostatistiques, l'épidémiologie, l'économie du domaine de la santé, la pharmaco économie, la profession de pharmacien, les normes de pratique professionnelles et éthiques, la diversité culturelle, les systèmes de soins de santé, la gestion de la profession et de la pratique

Sciences cliniques:

Pharmacocinétique clinique, médecines alternatives et complémentaires, abus et dépendance aux médicaments, médicaments et grossesse, premiers soins d'urgence, gériatrie, promotion de la santé et prévention des maladies, immunisation, technologies de l'information et outils de support à la pratique, administration des médicaments, nutrition, pédiatrie, loi et règlements sur la pharmacie, pharmacothérapie, rôle du pharmacien en santé publique, rôle du pharmacien dans les soins de première ligne, emploi sécuritaire des médicaments par le patient ainsi que automédication et usage des médicaments de vente libre.

Pratique pharmaceutique:

Pharmacocinétique clinique, la gestion des médicaments en collaboration avec les autres professionnels de la santé, les médecines complémentaires et alternatives, la formulation des médicaments, les centres de tests médicaux et diagnostiques, la délivrance d'ordonnance, la gestion des maladies, les drogues d'abus et de dépendance, l'information médicamenteuse incluant l'évaluation de la littérature basée sur les preuves, les médicaments pendant la grossesse, les soins d'urgence, la prise de décision, la gériatrie, la promotion de la santé et la prévention des maladies, l'immunisation, les technologies de l'information et le support technologique à la pratique, l'administration des médicaments, la nutrition, la pédiatrie, la prise en charge des patients et leur évaluation, les communications avec le patient et les professionnels, les dossiers patients et leur documentation, la loi et les règlements en pharmacie, la pharmacothérapie, l'évaluation physique, l'autorité prescriptive, et l'automédication.

ANNEX C: DOCTOR OF PHARMACY CURRICULUM (SEMESTER-BASED) OFFERED AT OHIO NORTHERN UNIVERSITY¹³

Note: The curriculum from Ohio Northern University was chosen because it is representative of a doctor of pharmacy degree curriculum that includes two years of general education and four years of professional curriculum. A complete description of courses follows.

Year 1:

Fall	CH	Spring	CH
General Chemistry 1 CHEM 1711	5	General Chemistry 2 CHEM 1721	5
Introductory Biology BIOL 1201	4	Anatomy/Histology BIOL 1341	3
Calculus MATH 1471 or Gen Ed	3	A&H Lab BIOL 1361	1
POP-1 PPHR 1011	1	Biostatistics (STAT 1761) or Gen Ed	3
Gen Ed	3	POP-2 PPHR 1021	1
Wellness/ Activity PPHR 1151 or Elective	1	Gen Ed or Calculus MATH 1471	3
Open Elective	1	Wellness/ Activity PPHR 1151 or Elective	1
		Open Elective	1

Year 2:

Fall	CH	Spring	CH
Organic Chemistry 1 CHEM 2511	3	Organic Chemistry 2 CHEM 2521	3
Organic Chemistry 1 Lab CHEM 2551	1	Organic Chemistry 2 Lab CHEM 2561	1
Biostatistics (STAT 1761) or Gen Ed	3	Applied Sciences of Pharmacy PHBS 2901	3
POP-3 PPHR 2011	2	POP-4 PPHR 2021	2
Med Microbiology BIOL 3131 or Gen Ed	3	Med Microbiology BIOL 3131 or Gen Ed	3
Gen Ed	3	Gen Ed	3
Gen Ed	3	Gen Ed/Biosci BIOL 3221/Open Elective	3
			Com IPPE

Year 3:

Fall	CH	Spring	CH
Physiology 1 BIOL 3311	4	Physiology 2 BIOL 3321	4
Biochemistry PHBS 3411	3	Biochemistry PHBS 3421	3
OTC/Home Diagnostics PPHR 3311	3	Immunology PHBS 3751	3
Extradisciplinary Seminar	3	Pharmaceut. Science Module-1 PHBS 3311	2
Open Elective(s)	2	Professional Skills 1	3
POP-5 PPHR 3011	2	Gen Ed	3
Bioscience Lab BIOL 3221/Open Elective	1		
			Inst IPPE

Year 4:

Fall	CH	Spring	CH
Pharm Science Module-2 PHBS 4321	7	Biomed Sciences Module-2 PHBS 4441	6
Biomed Sciences Module-1 PHBS 4431	5	BSPC Module-1 PPHR 4411	6

Professional Skills 2 PHR 4011	3	BSPC Module-2 PHR 4421	6
Open Elective(s)	3		Outreach hrs

Year 5:

Fall	CH	Spring	CH
BSPC Module-3 PHR 5431	5.5	Pharmacy Administration PHR 5501	6
BSPC Module-4 PHR 5441	3.5	Capstone PHR 5461	6
BSPC Module-5	3.5	Special Populations PHR 5531	3
BSPC Module-6	3.5	Open Elective(s)	3

Year 6:

Fall	CH	Spring	CH
Advanced Practice Rotations PHR 6501	4	Advanced Practice Rotations PHR 6506	4
Advanced Practice Rotations PHR 6502	4	Advanced Practice Rotations PHR 6507	4
Advanced Practice Rotations PHR 6503	4	Advanced Practice Rotations PHR 6508	4
Advanced Practice Rotations PHR 6504	4	Advanced Practice Rotations PHR 6509	4
Advanced Practice Rotations PHR 6505	4		

Course Descriptions

PHBS 2901 - Applied Sciences of Pharmacy

3 Credits

Fundamental principles and professional applications of basic and applied sciences, such as physics and biostatistics, are explored in relation to advanced science topics and integrated clinical sciences. Drug discovery and development, medical imaging, and the science of alternative medicine are discussed in the context of applications to pharmacy practice. The Human Genome Project is described and a method of DNA sequencing is presented with specific application to pharmacy. Model drug compounds are presented to illustrate the critical need for thorough understanding and broad integration of basic science principles when considering the multitude of related professional applications in the practice of pharmacy.

Offered spring semester.

Prerequisite(s): STAT 1761 or STAT 1561 or STAT 156 or STAT 256.

This course may be repeated 2 times.

PHBS 3101 - Drug Abuse Education

2 Credits

Development of skills in educating community groups regarding drugs and drug abuse. Emphasis on the development, mastery and delivery of concept-oriented lectures, and the effective use of learning materials in providing drug abuse education to various community groups, especially middle school and high school students. Background information, presentation techniques and approaches, and various current topics relating to drug abuse and chemical dependency. Offered fall and spring semesters.

Prerequisite(s): BIOL 1341 or BIOL 124.

This course is repeatable for a total of 2 hours.

PHBS 3111 - Service Learning in Drug Abuse Education

1 Credit Grading mode is S/U

Community service-oriented presentation of drug abuse education talks to various community groups, including middle school and high school students. Opportunity to further develop skills in conveying health information to the public, focusing on issues relating to drug abuse and chemical dependency.

Offered fall and spring semesters.

This course is repeatable for a total of 7 hours.

PHBS 3201 - Pharmacy Applications Laboratory

1 Credit

Clinical skills and problem-solving laboratory experiences examining basic science and clinical applications in pharmacy. In vitro and in vivo laboratory experiences as well as clinically based exercises emphasizing patient care.

Offered spring semester.

Prerequisite(s): PHBS 3411 or PHBS 341.

This course may be repeated 2 times.

PHBS 3311 - Pharmaceutical Sciences 1

2 Credits

Physical pharmacy applications in the pharmaceutical sciences. Application of physicochemical principles applied to pharmaceutical preparations.

Offered spring semester.

Prerequisite(s): (PHBS 3411 or PHBS 341) and (PHPR 3011 or PHPR 301) and (PHPR 3311 or PHPR 331).

This course may be repeated 2 times.

PHBS 3411 - Biochemistry 1

3 Credits

The chemistry of living organisms with emphasis on the human system. Topics include acid-base balance, buffers, chemistry of amino acids, proteins, enzymes, carbohydrates, lipids, vitamins, nucleic acids and porphyrins. Biochemical genetics and genetic disorders are also covered.

Offered fall semester.

Prerequisite(s): (CHEM 253) or (CHEM 2521 and CHEM 2561).

This course may be repeated 2 times.

PHBS 3421 - Biochemistry 2

3 Credits

The major metabolic processes that are essential for human life, including biochemical energetics, the electron transport system, Krebs cycle, the metabolism of carbohydrates, lipids and amino acids, and the biosynthesis of purines, pyrimidines, nucleic acids and proteins.

Offered spring semester.

Prerequisite(s): PHBS 3411 or PHBS 341.

This course may be repeated 2 times.

PHBS 3501 - Basic Nutrition

2 Credits

Basic principles of nutrition for Pharmacy and non-Pharmacy students. Topics include a description of essential nutrients, methods of evaluating individual dietary adequacy, and dietary methods for weight control.

Offered spring semester.

This course may be repeated 2 times.

PHBS 3751 - Immunology

3 Credits

Modern immunology and immunotherapy. The principles of basic and clinical immunology, historical background, host defense mechanisms, types of immune responses, nature of antigens and antibodies, antigen-antibody interactions leading to immunological disease, and transplantation and cancer immunology. The use of immunobiologicals currently available in the USA for prevention and treatment of most common infections and immunologic diseases. The role of biotechnology as a source of immunobiologicals will be discussed.

Offered spring semester.

Prerequisite(s): (PHBS 3411 or PHBS 341 or CHEM 3111).

This course may be repeated 2 times.

PHBS 4321 - Pharmaceutical Sciences 2

8 Credits

Basic and clinical pharmacokinetics and concepts of pharmacokinetics related to physiology and pathophysiology. Pharmaceutic and biopharmaceutic aspects of a variety of drug dosage forms and delivery systems.

Offered fall semester. Prerequisite(s): (PHBS 3311 or PHBS 431) and (PHBS 3421 or PHBS 342) and (PHBS 3751 or PHBS 375) and (PHBS 3201).

This course may be repeated 2 times.

PHBS 4431 - Biomedical Sciences 1

5 Credits

An interdisciplinary focus on the mechanisms by which diseases, drugs and chemicals alter normal biochemical and physiological processes. The sciences of pathophysiology, pharmacology, toxicology, and medicinal chemistry are integrated to provide an in-depth understanding of these mechanisms. The course progresses from factors affecting sub-cellular mechanisms to those of whole organ systems. Includes small group recitation and student-presented seminar sections in order to introduce the basic and clinical scientific literature and provide activities which illustrate the pharmacotherapeutic applications of the material.

Offered fall semester.

Prerequisite(s): (PHBS 3311 or PHBS 431) and (PHBS 3421 or PHBS 342) and (PHBS 3751 or PHBS 375) and (PHBS 3201).

This course may be repeated 2 times.

PHBS 4441 - Biomedical Sciences 2

6 Credits

Continuation of PHBS 4431.

Offered spring semester.

Prerequisite(s): (PHBS 4431 or PHBS 443) and (PHBS 4321 or PHBS 432).

Must have one of the following Student Attributes: P4.

This course may be repeated 2 times.

PHBS 5621 - Survey of Research Areas in the Pharmaceutical and Biomedical Sciences

1 Credit Grading mode is S/U

Presentation of the research areas in the pharmaceutical and biomedical areas. Opportunities in these areas are defined.

Offered spring semester.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times.

PHBS 5651 - Research in the Pharmaceutical and Biomedical Sciences

2 Credits

A research experience for students who may pursue graduate studies in the pharmaceutical or biomedical sciences or related areas. Participation in all aspects of the design, implementation, model preparation, instrumentation, and reporting of specific research problems.

Offered fall and spring semesters.

This course may be repeated 8 times.

PHBS 5901 - Special Topics in Pharmaceutical and Biomedical Sciences

1 to 3 Credits

Distinct special topics in the pharmaceutical and/or biomedical sciences.

Offered fall and spring semesters.

This course may be repeated 2 times.

Course Attribute(s): Requires Instructor Approval

PHBS 5971 - Independent Study - Pharmaceutical and Biomedical Sciences

1 to 3 Credits

Independent study in the pharmaceutical and/or biomedical sciences.

Offered fall and spring semesters.

This course may be repeated 8 times.

PHPR 1011 - The Profession of Pharmacy 1

1 Credit

The profession of pharmacy, the delivery of patient care, and the operation of the University and College of Pharmacy will be covered. Traditional classroom presentations are reinforced through structured experiential rotations in a variety of health care and service learning sites.

Offered fall semester.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 1 hour.

Course Attribute(s): Critical and Creative Thinking

PHPR 1021 - The Profession of Pharmacy 2

1 Credit

Continuation of PHPR 1011.

Offered spring semester.

Prerequisite(s): PHPR 1011.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 1 hour.

Course Attribute(s): Informed Ethical Responses

PHPR 1151 - Lifetime Wellness for Pharmacy Professionals

1 Credit

Lecture and lab course covering the essential elements of wellness. Topics include: fitness components, weight management, nutrition, stress management, emotional health, and behavior modification strategies.

Offered fall and spring semesters.

Must be enrolled in one of the following Colleges: Pharmacy.

Must be enrolled in one of the following Classes: Freshman.

This course may be repeated 2 times. This course is repeatable for a total of 1 hour.

PHPR 2011 - The Profession of Pharmacy 3

2 Credits

Continuation of professional development and understanding of pharmacy services and patient care delivery. Addresses issues relevant to pharmacy internship and advanced pharmacy course work.

Offered fall semester.

Prerequisite(s): PHPR 1021.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 2 hours.

Course Attribute(s): Scientific and Quantitative Literacy

PHPR 2021 - The Profession of Pharmacy 4

2 Credits

Continuation of PHPR 2011.

Offered spring semester.

Prerequisite(s): PHPR 2011.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 2 hours.

Course Attribute(s): Effective Communication Non-Writing

PHPR 2301 - Ethics in Professional Practice

2 Credits

Guided discussions show there are ethical problems in life and there are better and worse ways of dealing with those problems.

Offered spring semester.

Must have one of the following Student Attributes: P5, P4.

PHPR 2411 - Contemporary Pharmacy Practice 1

2 Credits

Multiple practice settings including retail, institutional, manufacturing, distribution, association, government and how each is implementing a pharmaceutical care mission. Offered fall semester. Must be enrolled in one of the following Colleges: Pharmacy, Business Administration. Must be enrolled in one of the following Fields of Study: Pharmaceutical Business, Pharmacy. Must be enrolled in one of the following Classes: Pharmacy - Fifth Year.

PHPR 2421 - Contemporary Pharmacy Practice 2

2 Credits

Current topics from multiple practice settings including retail, institutional, manufacturing, distribution, health care/pharmacy associations, and government will be discussed and includes how each is implementing a patient care and pharmaceutical care mission.

Offered spring semester.

Must be enrolled in one of the following Colleges: Pharmacy, Business Administration. Must be enrolled in one of the following Fields of Study: Pharmaceutical Business, Pharmacy.

Must be enrolled in one of the following Classes: Pharmacy - Fifth Year.

PHPR 2511 - Preventative Medicine: Issues and Education

2 Credits

Important health issues in the United States and the applications these disease states have on individual health, health care costs, and productivity. Special emphasis on learning teaching methods that can be effective in increasing public awareness and modifying behavior in order to prevent disease.

Offered spring semester.

Must be enrolled in one of the following Fields of Study: Nursing, Pharmacy, Public Health.

Must be enrolled in one of the following Classes: Pharmacy - Fifth Year.

This course may be repeated 2 times. This course is repeatable for a total of 2 hours.

PHPR 2611 - Professional Leadership Development

1 Credit

Professional Leadership Development is an elective course designed for pharmacy students who have completed one or two years of study in the Pharmacy College. The goal of the course is to help students in developing their leadership skills for preparation in future leadership roles in the profession.

Prerequisite(s): PHPR 1021 or PHPR 103.

Must be enrolled in one of the following Colleges: Pharmacy.

PHPR 3011 - The Profession of Pharmacy 5

2 Credits

Continues professional development, understanding, and reinforcement of pharmacy services and patient care delivery. The functional practice of pharmacy, including product (medication and information) distribution systems and evaluation of their quality and impact on patient care.

Offered fall semester.

Prerequisite(s): PHPR 2021.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 2 hours.

PHPR 3021 - The Profession of Pharmacy 6

2 Credits

Continuation of PHPR 3011.

Offered spring semester.

Prerequisite(s): PHPR 3011 and PHPR 3311.

Must be enrolled in one of the following Colleges: Pharmacy.

Must be enrolled in one of the following Fields of Study: Pharmacy.

Must be enrolled in one of the following Classes: Junior, Senior.

Must have one of the following Student Attributes: P3.

This course may be repeated 2 times. This course is repeatable for a total of 2 hours.

PHPR 3311 - OTC Products

3 Credits

Students gain skills to counsel patients who desire to conduct self-medication or self-therapy with nonprescription drug products.

Offered fall semester.

Prerequisite(s): PHPR 2021.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 3 hours.

PHPR 3401 - Women's Health Issues

2 Credits

This 2-credit hour course will introduce students to timely and important topics in women's health through a discussion-based approach guided by the course instructor. This course will broadly cover a number of issues that impact women's health and affect the provision of healthcare to women in the U.S. and internationally, both from a clinical health and public health perspective. Students will be presented with a holistic view of women's health across the lifespan and will be introduced to topics such as the biological basis for sex-related differences and subsequent health outcomes, the involvement of women in clinical trials, and maternal and child health. Students will also be exposed to social and economic issues that impact women's health in the U.S. and internationally.

Offered spring semester.

Must have one of the following Student Attributes: P3.

PHPR 3411 - Introduction to Natural Product Therapeutics

2 Credits

The course will help pharmacy students understand the use of therapeutics and natural products in modern medical practice and the role of the pharmacist within the practice. Offered spring semester.

Must have one of the following Student Attributes: P5, P4.

PHPR 3431 - Chemical Dependency

2 Credits

This course educates the pharmacy student about the disease of chemical dependency, the risks to pharmacists, consequences of use (personal and professional) and treatment methods and recovery.

Offered fall semester.

Must have one of the following Student Attributes: P5, P4.

PHPR 3451 - Pharmacy Ownership

2 Credits

A step wise approach to establishing a pharmacist owned business. Starting with a review of the various business opportunities available for someone with a pharmacy degree, the course begins with the philosophy of business ownership and then leads the student through the steps needed to open a business. Market and site analysis, business forms, lease review, developing a business plan, understanding financial considerations, capital needs, acquiring startup monies, layout, human resources and promotional strategy are all reviewed.

Offered spring semester.

Must have one of the following Student Attributes: P3.

PHPR 4011 - Patient Care Assessment Module 1

2 Credits

Preparation for subsequent therapeutic modules. Development and enhancement of analytical and communicative skills required to prepare a drug therapy problem list. Offered fall semester.

Prerequisite(s): PHPR 3021 Minimum Grade of C.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 2 hours.

PHPR 4411 - Cardiovascular Module

6 Credits

An integrated approach to organ system disorders including the rational use of pharmacological agents used to treat them. Comprehensive discussion of drug design and structure activity relationships is integrated with the therapeutic and toxicologic actions of the drugs. Basic principles of the pharmacokinetic and pharmaco-dynamic properties of the drugs used in these disorders are presented and discussed.

Offered spring semester.

Prerequisite(s): PHBS 4321 and PHBS 4431 and PHPR 4011.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 6 hours.

PHPR 4421 - Chronic and Ambulatory Medicine Module

6 Credits

Continuation of PHPR 4411. An integrated approach to organ system disorders including the rational use of pharmacological agents used to treat them. Comprehensive discussion of drug design and structure activity relationships is integrated with the therapeutic and toxicologic actions of the drugs. Basic principles of the pharmacokinetic and pharmaco-dynamic properties of the drugs used in these disorders are presented and discussed.

Offered spring semester.

Prerequisite(s): PHBS 4321 and PHBS 4431 and PHPR 4011.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 6 hours.

PHPR 5251 - Drugs of Abuse

1 Credit

Major issues regarding drug abuse, with special emphasis on the specific agents, their sources, common distribution modes, patterns of substance abuse, pharmacological effects, mechanisms, toxicological concerns, treatment modalities, and approaches to drug abuse education.

Offered fall and spring semesters.

Must have one of the following Student Attributes: P5.

PHPR 5401 - Patient Counseling and Communications

2 Credits

To be a pharmacist is to be an educator and communicator of health and medication information. Counseling patients regarding prescription and over-the-counter medications is a skill that usually develops with practice and professional guidance. The purpose of this course is to give the interested student some constructive critical evaluation in the art of patient counseling.

Offered spring semester.

Must have one of the following Student Attributes: P4, P5, P3.

PHPR 5431 - Infectious Disease Module

5.5 Credits

Continuation of PHPR 4421. An integrated approach to organ system disorders including the rational use of pharmacological agents used to treat them. Comprehensive discussion of drug design and structure activity relationships is integrated with the therapeutic and toxicologic actions of the drugs. Basic principles of the pharmacokinetic and pharmaco-dynamic properties of the drugs used in these disorders are presented and discussed.

Offered fall semester.

Prerequisite(s): PHPR 4411 and PHPR 4421.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 5.5 hours.

PHPR 5441 - Advanced Endocrine Module

3.5 Credits

Continuation of PHPR 5431. An integrated approach to organ system disorders including the rational use of pharmacological agents used to treat them. Comprehensive discussion of drug design and structure activity relationships is integrated with the therapeutic and toxicologic actions of the drugs. Basic principles of the pharmacokinetic and pharmaco-dynamic properties of the drugs used in these disorders are presented and discussed.

Offered fall semester.

Prerequisite(s): PHPR 4411 and PHPR 4421.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 3.5 hours.

PHPR 5451 - Central Nervous System Module

5.5 Credits

Continuation of PHPR 5441. An integrated approach to organ system disorders including the rational use of pharmacological agents used to treat them. Comprehensive discussion of drug design and structure activity relationships is integrated with the therapeutic and toxicologic actions of the drugs. Basic principles of the pharmacokinetic and pharmaco-dynamic properties of the drugs used in these disorders are presented and discussed.

Offered fall semester.

Prerequisite(s): PHPR 4411 and PHPR 4421.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 5.5 hours.

PHPR 5461 - Capstone in Pharmacy Practice

6 Credits

The module requires the student to utilize accumulated pharmaceutical education and apply learned principles to organize and synthesize relevant information to describe, optimize and critique drug therapy in unique and classic diseases. Information will be presented in written and oral, formal and informal formats. Activities include case presentations, reviews of “the literature,” literature critiques and other formats that allow demonstration of proficiency in effective, safe, and 'patient specific application of drug therapy. Students work in small groups when possible to demonstrate interpersonal skills. Culminates with an encompassing final exam which is a prerequisite for clinical rotations.

Offered spring semester.

Prerequisite(s): PHPR 5431 and PHPR 5441 and PHPR 5451 and PHPR 5471.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 6 hours.

PHPR 5471 - Oncology Module

3.5 Credits

Continuation of PHPR 5451. An integrated approach to organ system disorders including the rational use of pharmacological agents used to treat them. Comprehensive discussion of drug design and structure activity relationships is integrated with the therapeutic and toxicologic actions of the drugs. Basic principles of the pharmacokinetic and pharmaco-dynamic properties of the drugs used in these disorders are presented and discussed.

Offered fall semester.

Prerequisite(s): PHPR 4411 and PHPR 4421.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 3.5 hours.

PHPR 5501 - Pharmacy Administration Module

6 Credits

An interdisciplinary approach to the practice of pharmacy as it fits into the contemporary health-care system and the business environment. Includes theoretical concepts as well as practical methodology techniques to assess the external and internal economic, social, philosophical, ethical, and legal influences on the practice. Planning, evaluating, and decision making through financial report analysis and case study is stressed. Offered spring semester.

Prerequisite(s): PHPR 5431 and PHPR 5441 and PHPR 5451 and PHPR 5471.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 6 hours.

PHPR 5531 - Special Populations

3 Credits

The course will educate students in the clinical guidelines and therapeutics of special patient populations including pediatrics, geriatrics, pregnancy and lactation, and others. Offered spring semester.

Prerequisite(s): PHPR 5431 and PHPR 5441 and PHPR 5451 and PHPR 5471.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 3 hours.

PHPR 5551 - Emergency Medicine

2 Credits Grading mode is S/U

An overview of unscheduled medical appointments and emergencies.

Offered spring semester.

Must have one of the following Student Attributes: P5.

PHPR 5561 - Palliative Care

2 Credits

Discuss and understand related pathophysiology changes and apply related therapeutics to various chronic disease states that warrant palliation of related symptoms. The role of the interdisciplinary team including pharmacists, nurses, physicians, chaplains and related social support will be explored as a pivotal point for successful palliative care. Pharmacokinetic and pharmacodynamic implications of geriatric patients will be discussed in relation to therapeutic selection and various disease progression models.

Offered spring semester.

Must have one of the following Student Attributes: P5.

PHPR 5941 - Seminar in Pharmacy Practice

1 to 3 Credits

Can be repeated as the topic varies.

Offered fall and spring semesters.

Must be enrolled in one of the following Colleges: Pharmacy.

This course is repeatable for a total of 3 hours.

PHPR 5971 - Independent Study-Pharmacy Practice

1 to 16 Credits

Can be repeated as the topic varies.

Offered fall and spring semesters.

Must be enrolled in one of the following Colleges: Pharmacy.

This course is repeatable for a total of 16 hours.

PHPR 6501 - Advanced Pharmacy Practice Experience - 1

4 Credits

Full-time experiential program emphasizing delivery of pharmaceutical care in primary, secondary and tertiary patient care settings, as well as a means of integrating facts and principles received from antecedent courses. The process will occur in both institutional and ambulatory settings. At each practice setting, the student is expected to become a functioning component of the ongoing pharmaceutical care services through faculty instruction, self-learning, and by observing the modeling of attendant faculty members. Completion of all BSPC and PHPR coursework with a C or better is required.

Prerequisite(s): PHPR 5461 Minimum Grade of C and PHPR 5501 Minimum Grade of C and PHPR 5531 Minimum Grade of C.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 4 hours.

PHPR 6502 - Advanced Pharmacy Practice Experience - 2

4 Credits

Full-time experiential program emphasizing delivery of pharmaceutical care in primary, secondary and tertiary patient care settings, as well as a means of integrating facts and principles received from antecedent courses. The process will occur in both institutional and ambulatory settings. At each practice setting, the student is expected to become a functioning component of the ongoing pharmaceutical care services through faculty instruction, self-learning, and by observing the modeling of attendant faculty members. Completion of all BSPC and PHPR coursework with a C or better is required.

Prerequisite(s): PHPR 5461 Minimum Grade of C and PHPR 5501 Minimum Grade of C and PHPR 5531 Minimum Grade of C.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 4 hours.

PHPR 6503 - Advanced Pharmacy Practice Experience - 3

4 Credits

Full-time experiential program emphasizing delivery of pharmaceutical care in primary, secondary and tertiary patient care settings, as well as a means of integrating facts and principles received from antecedent courses. The process will occur in both institutional and ambulatory settings. At each practice setting, the student is expected to become a functioning component of the ongoing pharmaceutical care services through faculty instruction, self-learning, and by observing the modeling of attendant faculty members. Completion of all BSPC and PHPR coursework with a C or better is required.

Prerequisite(s): PHPR 5461 Minimum Grade of C and PHPR 5501 Minimum Grade of C and PHPR 5531 Minimum Grade of C.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 4 hours.

PHPR 6504 - Advanced Pharmacy Practice Experience - 4

4 Credits

Full-time experiential program emphasizing delivery of pharmaceutical care in primary, secondary and tertiary patient care settings, as well as a means of integrating facts and principles

received from antecedent courses. The process will occur in both institutional and ambulatory settings. At each practice setting, the student is expected to become a functioning component of the ongoing pharmaceutical care services through faculty instruction, self-learning, and by observing the modeling of attendant faculty members. Completion of all BSPC and PHPR coursework with a C or better is required.

Prerequisite(s): PHPR 5461 Minimum Grade of C and PHPR 5501 Minimum Grade of C and PHPR 5531 Minimum Grade of C.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 4 hours.

PHPR 6505 - Advanced Pharmacy Practice Experience - 5

4 Credits

Full-time experiential program emphasizing delivery of pharmaceutical care in primary, secondary and tertiary patient care settings, as well as a means of integrating facts and principles received from antecedent courses. The process will occur in both institutional and ambulatory settings. At each practice setting, the student is expected to become a functioning component of the ongoing pharmaceutical care services through faculty instruction, self-learning, and by observing the modeling of attendant faculty members. Completion of all BSPC and PHPR coursework with a C or better is required.

Prerequisite(s): PHPR 5461 Minimum Grade of C and PHPR 5501 Minimum Grade of C and PHPR 5531 Minimum Grade of C.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 4 hours.

PHPR 6506 - Advanced Pharmacy Practice Experience - 6

4 Credits

Full-time experiential program emphasizing delivery of pharmaceutical care in primary, secondary and tertiary patient care settings, as well as a means of integrating facts and principles received from antecedent courses. The process will occur in both institutional and ambulatory settings. At each practice setting, the student is expected to become a functioning component of the ongoing pharmaceutical care services through faculty instruction, self-learning, and by observing the modeling of attendant faculty members. Completion of all BSPC and PHPR coursework with a C or better is required.

Prerequisite(s): PHPR 5461 Minimum Grade of C and PHPR 5501 Minimum Grade of C and PHPR 5531 Minimum Grade of C.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 4 hours.

PHPR 6507 - Advanced Pharmacy Practice Experience - 7

4 Credits

Full-time experiential program emphasizing delivery of pharmaceutical care in primary, secondary and tertiary patient care settings, as well as a means of integrating facts and principles received from antecedent courses. The process will occur in both institutional and ambulatory settings. At each practice setting, the student is expected to become a functioning component of the ongoing pharmaceutical care services through faculty instruction, self-learning, and by

observing the modeling of attendant faculty members. Completion of all BSPC and PHPR coursework with a C or better is required.

Prerequisite(s): PHPR 5461 Minimum Grade of C and PHPR 5501 Minimum Grade of C and PHPR 5531 Minimum Grade of C.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 4 hours.

PHPR 6508 - Advanced Pharmacy Practice Experience - 8

4 Credits

Full-time experiential program emphasizing delivery of pharmaceutical care in primary, secondary and tertiary patient care settings, as well as a means of integrating facts and principles received from antecedent courses. The process will occur in both institutional and ambulatory settings. At each practice setting, the student is expected to become a functioning component of the ongoing pharmaceutical care services through faculty instruction, self-learning, and by observing the modeling of attendant faculty members. Completion of all BSPC and PHPR coursework with a C or better is required.

Prerequisite(s): PHPR 5461 Minimum Grade of C and PHPR 5501 Minimum Grade of C and PHPR 5531 Minimum Grade of C. Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 4 hours.

PHPR 6509 - Advanced Pharmacy Practice Experience - 9

4 Credits

Full-time experiential program emphasizing delivery of pharmaceutical care in primary, secondary and tertiary patient care settings, as well as a means of integrating facts and principles received from antecedent courses. The process will occur in both institutional and ambulatory settings. At each practice setting, the student is expected to become a functioning component of the ongoing pharmaceutical care services through faculty instruction, self-learning, and by observing the modeling of attendant faculty members. Completion of all BSPC and PHPR coursework with a C or better is required.

Prerequisite(s): PHPR 5461 Minimum Grade of C and PHPR 5501 Minimum Grade of C and PHPR 5531 Minimum Grade of C.

Must be enrolled in one of the following Colleges: Pharmacy.

This course may be repeated 2 times. This course is repeatable for a total of 4 hours.

ANNEX D: PROPOSED ONGOING ACPE CONSULTATIVE ACTIVITY

Financial considerations would depend on level of consultative activity desired.

Time frame	ACPE involvement (drafts sent via e-mail)	Activity
Year 1: Academic Year 2014–2015	Review drafts of revised curriculum and provide feedback	Reviewers in English and French. Three to four drafts. Review time: 1 to 2 days per draft per reviewer.
	Review drafts of transition plan and provide feedback	Reviewers in English and French. One to two drafts. Review time: 1 to 2 days per draft per reviewer.
Year 2: Academic year 2015–2016	Review syllabi for the third and fourth-year courses and provide feedback	Reviewers in English and French. One to two drafts. Review time: 4 days per draft per reviewer. (2 days for each course year).
Year 3: Academic year 2016–2017	Review syllabi for the fifth and sixth-year courses and provide feedback	Reviewers in English and French. One to two drafts. Review time: 4 days per draft per reviewer (2 days for each course year).
Year 4: Academic Year 2017–2018	Review of formative and summative assessments from the students who completed the third year of the revised curriculum and provide feedback for quality improvement	Reviewers in English and French. Review time: 2 days per reviewer
	Review of proposed continuing education activities for preceptors, including the quality criteria for sites and preceptor selection and provide feedback	Reviewers in English and French. Review time: 2 days per reviewer
Year 5: Academic Year 2018–2019	Review of formative and summative assessments from the students who completed the fourth year of the revised curriculum and provide feedback for quality improvement	Reviewers in English and French. Review time: 2 days per reviewer
	Consultants conduct on-site evaluation to assess the progress in the implementation of the new curriculum and the preparedness to launch the sixth-year curriculum	On-site consultative visit Two consultants (English and French) × 5 days
Year 6: Academic Year 2019–2020	Review of formative and summative assessments from the students who completed the fifth year of the revised curriculum and provide feedback	Reviewers in English and French. Review time: 2 days per reviewer

Annex C

	for quality improvement	
	Review draft of overall assessment of the revised curriculum and provide feedback for quality improvement	Reviewers in English and French. Review time: 3 to 4 days per reviewer

ANNEX E: FACULTY OF PHARMACEUTICAL SCIENCES, UNIVERSITY OF KINSHASA, SUMMARY REPORT ON ANSWERS TO FOCUSED QUESTIONS (SELF-ASSESSMENT)

Criterion No. 1: Mission, Goals, and Values

1.1 The Faculty of Pharmaceutical Sciences of the University of Kinshasa is part of the university and depends entirely on the university organization and operations. Therefore, the vision and mission of the faculty flow from those of the university.

Vision: to deliver teachings and trainings guided by creativity, innovation and excellency

Mission: to train cadres who are able to conceive and organize the fundamental and applied research in the pharmacy domain. To ensure that students contribute to the economic and social development of the country through the acquired knowledge in the faculty.

The alignment of the vision and mission to the national needs is based on the fact that the trained pharmacist acquire knowledge and develops competencies that help to (1) formulate and manufacture medicines, (2) dispense medicines, (3) provide pharmaceutical care, (4) conduct pharmaceutical inspection, (5) coordinate pharmacovigilance, (6) conduct biomedical, toxicological, and nutritional analyses

1.2 There is insufficient support through Faculty mission to the six aspects listed above.

1.3 Collaboration with the profession of pharmacy exists, but there is room for improvement.

1.4 The mission of the Faculty has been dictated by the mission of university and remained unchanged since then. It is appreciated that this should reviewed and updated

Criterion No. 2: Planning and Continuous Quality Improvement

There is no specific mission and strategic plan for the Faculty as it depends on the broad mission and strategic plan of university.

Criterion No. 3: School and University Relationships

The collaboration between the Faculty and university is done through the university council of which the dean of the Faculty is member.

Criterion No. 4: Other Collaborative Relationships

Agreements are elaborated by the concerned parties, approved by the faculty council, scrutinized by the university council, and evaluated by a third party. The university provides limited support for collaboration. There is insufficient collaboration with regulatory and professional bodies.

Criterion No. 5: Organizational Structure and Governance of the School

The dean and other administrative members are elected by the faculty council. It is compulsory that all members of the faculty council are professors. To be recruited, candidates should have completed the pharmacy program with a distinction.

Criterion No. 6: Competencies of Graduates

The competency framework was developed based on pharmaceutical and health-related needs of populations and the tasks the pharmacist is supposed to do. The training on pharmaceutical management helps develop competencies to select, procure, and distribute medicines and ensure the rational use of medicines and related supplies, and also contribute to projected future national medication and health-related needs. This is to ensure that populations have access to medicines and health services needed.

Criterion No. 7: Development and Delivery of the Curriculum

The curriculum is developed by different departments and scrutinized by faculty and university councils, and then by the administration council of universities and thereafter promulgated by the Minister of Education. The model of the curriculum that is three years fundamental sciences and three years pharmaceutical sciences has been chosen to ensure that students and professors are not overwhelmed and overloaded as they were in the past.

Criterion No. 8: Curricular Foundation in the Sciences

Given that the curriculum had been drawn up based on desired competencies, the foundations of the sciences addressed by such curriculum are, obviously, related to the competencies. A list of different sciences and the curriculum structure have provided for reference.

Criterion No. 9: Simulation and Practice Experiences

Students are exposed to activities pertaining to virtual pharmacy—that is, engaging in analyzing cases through case studies and giving pharmaceutical opinions; analyzing, validating, and virtually dispensing medical prescriptions. Students are in direct interaction with patients during attachment and internship in community pharmacies, hospitals, and labs. Opportunity for communication with other health care professionals is obtained through in-service training sessions and during attachment and internship whereby all health care providers (doctors, nurses, pharmacists, etc.) interact for the benefit of the patient. The Faculty is responsible for postgraduate program. The Faculty also collaborates with the professional council in the registration process with the council. To be registered, the council ensures that candidates are pharmacists holding a degree from or approved by the Faculty. Furthermore, the Faculty organizes a seminar meant for candidates' orientation.

Criterion No. 10: Assessment of Student Learning and Curricular Improvement

The teaching model employed in the Faculty seems to be between the traditional and modern teaching models:

	Traditional	Modern
Centered on	Teacher	Student
Based on	Disciplines	Problems
Matter/content	Described	Integrated
Model	Know nothing	Learner
Approach	Teaching	Learning

The assessment data are not used to improve the curriculum. Formative approach is used because students have to be trained to acquire knowledge, but summative approach is not used so far.

Criterion No. 11: Student Services

The university and the Faculty offer social and health services to students through a service called “Les Oeuvres Etudiantines.” The Internet services provided are not up to standard for the time being, but the country is introducing fiber optic and believes that things will be getting better soon.

Criterion No. 12: Academic Policies and Enrollment Management

Policies are determined by the Ministry, the corporate administration council of universities, and the administration council of the university, and these policies are applied by the faculty and departmental councils. The student enrollment management is based and guided by the faculty capacity and the predetermined criteria for enrolment that are described in the Vademecum 2010:47.

Criterion No. 13: Student Representation, Perspectives, and Grievances

In general, there is lack of student inputs on issues pertaining to curricular development and improvement. But for student services, the faculty support students’ initiatives and inputs. To make this easy, a student representative has been included as member of the faculty council.

Criterion No. 14: Academic and Other Staff Resources

To ensure that all components of the curriculum are coordinated, taught, and appropriately evaluated, all departments, as well as the board of the faculty council, meet on a weekly basis to discuss issues in relation to curricular delivery. In addition, the faculty council, constituted by all professors, meets every month to discuss general issues regarding the management of the Faculty. To ensure that the Faculty has an adequate number of academic and other staff, data on the nature of the program courses or modules, number of students, and the workload for each module are taken into account to quantitatively figure out the need for staff in terms the number. There is little effort, for the time being, to put in place strategies for staff retention and an insufficient number of administrative staff; therefore the needs are not well covered. The composition of the academic staff within all disciplines and sciences seems to meet the needs in that all the modules are covered by professors who are pharmacists and PhDs and are all faculty staff members in exception to some few professors who are from other faculties and who are in-charges of fundamental science modules such as Mathematics, Physics, etc.

Criterion No. 15: Continuing Professional Development and Evaluation of the Staff

To ensure continuing professional development and evaluation of the staff, the faculty encourages and supports professors and other academic staff to enroll in trainings within the country or oversea to keep abreast of development in their respective domains. From time to time scholarships and bursaries are granted in this regard. In addition, professors and other academic staff participate in seminars and conferences meant to provide update information and knowledge to participants. Regarding the evaluation of professors, number of articles published and seminars or conferences attended to are thus far the only criteria for evaluation. On the other hand, staff are evaluated by their line supervisors (e.g.,

professors in their respective department are evaluate by the department head and eventually the Dean; the Dean by the Provost or the Academic Secretary of the university, and so on).

Criterion No. 16: Physical Facilities

The faculty has basic physical facilities for the delivery of its curriculum theoretically and practically. There is a workshop with handyman and other technicians for the maintenance of the facilities. Those facilities allow the faculty to preliminarily conduct researches and other scientific activities. The lecture halls, classrooms and laboratories permit or facilitate the students' learnings.

Criterion No. 17: Library and Educational Resources

The library of the faculty seems substandard for the time being. In most cases, textbooks available are old. Students and professors have access to online library but, unfortunately, access to the Internet is quite poor because of inadequate Internet service provision and limited broadband. The Faculty library, unlike the university library, does not use a suggestion box that offers opportunity to the library users to give their opinions and evaluate the quality of services delivered from the library facility.

Criterion No. 18: Pharmacy Practice Sites and Preceptors

1. Students are evaluated during experiential education.
2. Experiential education practice sites and preceptors are recruited, selected, oriented, trained, and evaluated.
3. The Faculty ensures adequate quantity of practice resources (sites and preceptors) through capacity planning and effective recruitment and retention strategies.
4. The Faculty and practice site establish their respective roles and responsibilities with regard to experiential education.
5. Quality improvement changes are made based on student and preceptor feedback.

During their attachment or internship, students are evaluated by the preceptors using an evaluation template designed and developed by the Faculty for this purpose. Criteria for evaluation include student attendance, sense of responsibility, cleanness and neatness at work, initiative and innovative spirit, ability to use materials and equipment, knowledge, etc.

Experiential education practice site and preceptors are selected and evaluated in collaboration with the pharmacy professional council and the pharmacy regulatory authority, taking into consideration the competency and experience of the preceptors and the quality of the physical facilities for practice. The faculty, in collaboration with preceptors, pharmacy council and pharmacy regulatory authority, plans all activities regarding the students internship taking into account the capacity and capability of the facilities. The Faculty defines the objectives of the experiential education practice. Students feedback serves as a base for quality improvement changes.

Criterion No. 19: Financial Resources

The budget for the Faculty is drawn up by the dean based on the inputs from different departments of the Faculty, then scrutinized and validated by the faculty council, and then submitted to the management committee of the university for final approval.

The financial resources allocated to the faculty are not sufficient to cover all the needs of the faculty. The board of the faculty council has authority and autonomy to manage resources allocated to the faculty. Nevertheless, the board has obligation to present the financial report to the faculty and university councils.

GLOSSARY/DEFINITIONS

The following definitions describe the way terms are used in this document. The glossary is not intended to provide or imply a globally adopted definition of the term.

Assessment: The structured evaluation of outcomes to determine how well the school is performing in various areas, such as student learning, curricular effectiveness, research productivity, and community service.

Competence: The ability of a pharmacy graduate to perform his or her duties accurately, make correct judgments, and interact appropriately with patients and colleagues. Professional competence is characterized by good problem-solving and decision-making abilities, a strong knowledge base, and the ability to apply knowledge and experience to diverse patient-care situations. (Source: adapted from Council on Credentialing in Pharmacy¹⁴)

Competency: A distinct knowledge, skill, attitude, or value that is essential to the practice of a profession. A pharmacist must master a variety of competencies to gain proficiency in the profession. (Source: adapted from Council on Credentialing in Pharmacy¹⁴)

Dean: The person identified as the leader of the school of pharmacy and professional degree program; the term is intended to include terms such as Director, Chair, or Head of School.

Formative assessment: Assessment procedures employed by teachers (academic staff) during the learning process to modify teaching and learning activities to improve student achievement.

Mission (of a school or university): Primary purpose and objectives; reason for existing.

Preceptor: An individual who instructs students in a practice (non-academic) setting. Similar terms include tutor, practice-based tutor, or practitioner-educator.

Stakeholders: The individuals, groups, or entities that have an interest or concern in the well-being and/or outcomes of the pharmacy school, institution, or program; for example, pharmacies that employ the graduates of the school, professional organizations, other health care providers who must work with the graduates.

Strategic planning: Discussing, investigating, and developing specific strategies to be implemented in the future to meet desired goals and objectives.

Summative assessment: Assessment of achievement at the end of a defined period of study, such as the completion of a course, assignment, or module.

REFERENCES

- ¹ World Health Organization Maximizing Positive Synergies Collaborative Group. An assessment of interactions between global health initiatives and country health systems. *Lancet* 2009;373(9681):2137–69.
- ² Chisholm-Burns MA, Slack M, Herrier R, et al. US pharmacists' effect as team members on patient care: systematic review and meta-analyses. *Med Care* 2010;48(10):923–33.
- ³ Pande S, Hiller JE, Nkansah N, Bero L. The effect of pharmacist-provided non-dispensing services on patient outcomes, health service utilization and costs in low-and middle-income countries. *Cochrane Database Syst Rev* 2013 Feb 28;2:CD010398.
- ⁴ King RC, Fomundam HN. Remodeling pharmaceutical care in Sub-Saharan Africa (SSA) amidst human resources challenges and the HIV/AIDS pandemic. *Int J Plann Manage*. 2010;25(1):30–48.
- ⁵ International Pharmaceutical Federation (FIP). *2013 FIPEd Global Education Report*. The Hague: FIP; 2013. <https://fip.org/static/fipededucation/2013/2013-FIPEd-GlobalEducationReport/>.
- ⁶ Doctor of Pharmacy. In: *Wikipedia*. Wikimedia Foundation; March 8 2014. A05 Aug. 2014. http://en.wikipedia.org/wiki/Doctor_of_Pharmacy. Accessed August 5, 2014.
- ⁷ Accreditation Council for Pharmacy Education. Democratic Republic of the Congo Survey Data, 2011. Unpublished, ACPE, Chicago, IL.
- ⁸ World Health Organization. Democratic Republic of the Congo: Health Profile. Last update May 2014. <http://www.who.int/2Fgho/2Fcountries/2Fcod.pdf%3Fua%3D1>. Accessed August 3, 2014.
- ⁹ Galvao TF, Silva MT, Neiva CS, Ribeiro LM, Pereira MG. Problem-based learning in pharmaceutical education: a systematic review and meta-analysis. *Scientific World Journal*. 2014 Feb 19;2014:578382. doi: 10.1155/2014/578382. eCollection 2014.
- ¹⁰ Lucas KH, Testman JA, Hoyland MN, Kimble AM, Euler ML. Correlation between active-learning coursework and student retention of core content during advanced pharmacy practice experiences. *Am J Pharm Educ* 2013 Oct 14;77(8):171.
- ¹¹ Perepelkin J. Redesign of a required undergraduate pharmacy management course to improve student engagement and concept retention. *Am J Pharm Educ*. 2012 Dec 12;76(10):201.

¹² Joint Commission of Pharmacy Practitioners (JCPP). *Pharmacists' Patient Care Process*. May 29, 2014.

<http://www.pharmacist.com/sites/default/files/JCPP_Pharmacists_Patient_Care_Process.pdf>. Accessed August 6, 2014.

¹³ Ohio Northern University. College of Pharmacy, Doctor of Pharmacy Curriculum. www.onu.edu/academics/rudolph_h_raabe_college_pharmacy/degree_programs. Accessed August 6, 2014.

¹⁴ Council on Credentialing in Pharmacy. *Credentialing in Pharmacy: A Resource Paper*. Washington, DC: Council on Credentialing in Pharmacy; 2010.