2008 Mississippi Curriculum Framework

Postsecondary Pharmacy Technology
(Program CIP: 51.0805 – Pharmacy Technician/Assistant)

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Acknowledgments

Preface

Pharmacy Technology Research Synopsis

Articles, books, Web sites, and other materials listed at the end of each course were considered during the revision process. The *American Society of Health-System Pharmacists (ASHP) Model Curriculum for Pharmacy Technician Training* was especially useful in providing insight into trends and issues in the field. These references are suggested for use by instructors and students during the study of the topics outlined.

Industry advisory team members from colleges throughout the state were asked to give input related to changes to be made to the curriculum framework. Specific comments related to soft skills needed in this program included the ability to communicate articulately, computer literacy skills, telephone skills, confidentiality, punctuality, flexibility, adaptability, creativity, the sense of professionalism, and the ability to perform within legal parameters. Occupational-specific skills stated included typing skills, computer skills, and math skills. Safety practices emphasized included following OSHA guidelines and use of universal precautions.

Curriculum
The following national standards were referenced in each course of the curriculum:
- CTB/McGraw-Hill LLC *Tests of Adult Basic Education, Forms 7 and 8* Academic Standards
- *21st Century Skills*
- *American Society of Health-System Pharmacists (ASHP), Model Curriculum for Pharmacy Technician Training(Second edition), Goal Statements*

Industry and instructor comments, along with current research, were considered by the curriculum revision team during the revision process; and changes were made as needed and appropriate. Many of the skills and topics noted in the research were already included in the curriculum framework. Specific changes made to the curriculum at the June 28, 2007, curriculum revision meeting included:
- Competencies and objectives were reviewed to ensure accuracy and appropriateness based on certification guides and industry needs and were written to a variety of levels of Bloom's taxonomy.
- References were suggested for each course.
- The Recommended Tools and Equipment list was updated.

Assessment
Students will be assessed using the *Pharmacy Technician Certification Board (PTCB) Pharmacy Technician Certification Exam.*

Professional Learning
It is suggested that instructors participate in professional learning related to the following concepts:
- Pedagogy training
- How to use the program Blackboard® site

- Differentiated instruction – To learn more about differentiated instruction, please go to http://www.paec.org/teacher2teacher/additional_subjects.html, and click on Differentiated Instruction. Work through this online course, and review the additional resources.

Articulation

No articulated credit will be offered upon implementation of this curriculum by the college.

Foreword

As the world economy continues to evolve, businesses and industries must adopt new practices and processes in order to survive. Quality and cost control, work teams and participatory management, and an infusion of technology are transforming the way people work and do business. Employees are now expected to read, write, and communicate effectively; think creatively, solve problems, and make decisions; and interact with each other and the technologies in the workplace. Vocational–technical programs must also adopt these practices in order to provide graduates who can enter and advance in the changing work world.

The curriculum framework in this document reflects these changes in the workplace and a number of other factors that impact local vocational–technical programs. Federal and state legislation calls for articulation between high school and community college programs, integration of academic and vocational skills, and the development of sequential courses of study that provide students with the optimum educational path for achieving successful employment. National skills standards, developed by industry groups and sponsored by the U.S. Department of Education and Labor, provide vocational educators with the expectations of employers across the United States. All of these factors are reflected in the framework found in this document.

Referenced throughout the courses of the curriculum are the 21st Century Skills, which were developed by the Partnership for 21st Century Skills, a group of business and education organizations concerned about the gap between the knowledge and skills learned in school and those needed in communities and the workplace. A portion of the 21st Century Skills addresses learning skills needed in the 21st century, including information and communication skills, thinking and problem-solving skills, and interpersonal and self-directional skills. The need for these types of skills has been recognized for some time, and the 21st Century Skills are adapted in part from the 1991 report from the U.S. Secretary of Labor's Commission on Achieving Necessary Skills (SCANS). Another important aspect of learning and working in the 21st century involves technology skills, and the International Society for Technology in Education, developers of the National Educational Technology Standards (NETS), were strategic partners in the Partnership for 21st Century Skills.

Each postsecondary program of instruction consists of a program description and a suggested sequence of courses that focus on the development of occupational competencies. Each vocational–technical course in this sequence has been written using a common format, which includes the following components:

- Course Name – A common name that will be used by all community/junior colleges in reporting students

- Course Abbreviation – A common abbreviation that will be used by all community/junior colleges in reporting students

- Classification – Courses may be classified as:
    - Vocational–technical core – A required vocational–technical course for all students

- o Area of concentration (AOC) core – A course required in an area of concentration of a cluster of programs
  - o Vocational–technical elective – An elective vocational–technical course
  - o Related academic course – An academic course that provides academic skills and knowledge directly related to the program area
  - o Academic core – An academic course that is required as part of the requirements for an associate's degree

- Description – A short narrative that includes the major purpose(s) of the course and the recommended number of hours of lecture and laboratory activities to be conducted each week during a regular semester

- Prerequisites – A listing of any courses that must be taken prior to or on enrollment in the course

- Corequisites – A listing of courses that may be taken while enrolled in the course

- Competencies and Suggested Objectives – A listing of the competencies (major concepts and performances) and of the suggested student objectives that will enable students to demonstrate mastery of these competencies.

The following guidelines were used in developing the program(s) in this document and should be considered in compiling and revising course syllabi and daily lesson plans at the local level:

- The content of the courses in this document reflects approximately 75 percent of the time allocated to each course. The remaining 25 percent of each course should be developed at the local district level and may reflect the following:
  - o Additional competencies and objectives within the course related to topics not found in the state framework, including activities related to specific needs of industries in the community college district
  - o Activities that develop a higher level of mastery on the existing competencies and suggested objectives
  - o Activities and instruction related to new technologies and concepts that were not prevalent at the time the current framework was developed and revised
  - o Activities that implement components of the Mississippi Tech Prep initiative, including integration of academic and vocational–technical skills and coursework, school-to-work transition activities, and articulation of secondary and postsecondary vocational–technical programs
  - o Individualized learning activities, including worksite learning activities, to better prepare individuals in the courses for their chosen occupational area

- Sequencing of the course within a program is left to the discretion of the local district. Naturally, foundation courses related to topics such as safety, tool and equipment usage, and other fundamental skills should be taught first. Other courses related to specific skill areas and related academics, however, may be sequenced to take advantage of seasonal and climatic conditions, resources located outside of the school, and other factors.

Postsecondary Pharmacy Technology

- Programs that offer an Associate of Applied Science degree must include a minimum 15 semester credit hour academic core. Specific courses to be taken within this core are to be determined by the local district. Minimum academic core courses are as follows:
    - o 3 semester credit hours   Math/Science Elective
    - o 3 semester credit hours   Written Communications Elective
    - o 3 semester credit hours   Oral Communications Elective
    - o 3 semester credit hours   Humanities/Fine Arts Elective
    - o 3 semester credit hours   Social/Behavioral Science Elective

    It is recommended that courses in the academic core be spaced out over the entire length of the program, so that students complete some academic and vocational–technical courses each semester. Each community/junior college has the discretion to select the actual courses that are required to meet this academic core requirement.

- Technical elective courses have been included to allow community colleges and students to customize programs to meet the needs of industries and employers in their area.

In order to provide flexibility within the districts, individual courses within a framework may be customized by:
- adding new competencies and suggested objectives.
- revising or extending the suggested objectives for individual competencies.
- adjusting the semester credit hours of a course to be up one hour or down one hour (after informing the State Board for Community and Junior Colleges [SBCJC] of the change).

In addition, the curriculum framework as a whole may be customized by:
- resequencing courses within the suggested course sequence.
- developing and adding a new course that meets specific needs of industries and other clients in the community or junior college district (with SBCJC approval).
- utilizing the technical elective options in many of the curricula to customize programs.

Table of Contents

Program Description

The Pharmacy Technology curriculum is a two-year program of study designed to prepare the student for employment and advancement in the pharmacy field. The curriculum requires a minimum of 72 hours of courses in order to obtain an Associate of Applied Science degree. CPR-Health Care Provider is a prerequisite for the program.

Pharmacy technicians assist and support licensed pharmacists in providing direct patient care and medications to patients. Pharmacy technicians must work under the direction of a licensed pharmacist. Employers include pharmacies based in hospitals, retail settings, home health care, nursing homes, clinics, nuclear medicine settings, and mail order prescription companies. Nontraditional employers for pharmacy technicians include medical insurance companies, medical computer software companies, drug manufacturing companies, drug wholesale companies, and food processing companies. The one requirement these pharmacy technician duties have in common is a need for absolute accuracy and precision in the technical and clerical aspects of this career.

Upon graduation from the program, the student is eligible to take the Pharmacy Technician Certification Board (PTCB) Pharmacy Technician Certification Exam.

Suggested Course Sequence*
Pharmacy Technology

FIRST YEAR

1 sch Pharmacy Technician Fundamentals (PHM 1111)
3 sch Pharmacy Law (PHM 1123)
2 sch Computer Applications in Pharmacy (PHM 1212)
3 sch Pharmacy Anatomy and Physiology (PHM 1413)
3 sch Intermediate Algebra (MAT 1233) or higher
3 sch Written Communications Elective
_____
15 sch

4 sch Basic Chemistry (CHE 1114)
4 sch Pharmacy Math and Dosage Calculations (PHM 1314)
4 sch Pharmacology I (PHM 1424)
5 sch Pharmacy Practice (PHM 1525)
3 sch Social/Behavioral Science Elective
_____
20 sch

Summer Semester
2 sch Pharmaceutical Compounding (PHM 1512)
4 sch Practicum I (PHM 2614)

SECOND YEAR

4 sch Pharmacology II (PHM 2434)
4 sch Nonprescription Medications and Devices (PHM 2534)
4 sch Practicum II (PHM 2624)
3 sch Oral Communications Elective
_____
15 sch

3 sch Drug Information Research (PHM 2543)
4 sch Practicum III (PHM 2634)
5 sch Pharmacy Management (PHM 2715)
3 sch Pharmacy Transition (PHM 2813)
3 sch Humanities/Fine Arts Elective
_____
18 sch

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

Pharmacy Technology Courses

Course Name: Pharmacy Technician Fundamentals

Course Abbreviation: PHM 1111

Classification: Vocational-Technical Core

Description: Introduces the student to the pharmacy technician career field and provides an overview of pharmacy practice and the opportunities open to certified pharmacy technicians. (1 sch: 1-hr lecture)

Prerequisite: None

Competencies and Suggested Objectives

1. Recognize the pharmacy technician's general role in the delivery of health care.
    a. Compare and contrast the responsibilities of the pharmacist and the technician in the collection of patient-specific information.
    b. Compare and contrast the responsibilities of the pharmacist and the technician when receiving and screening prescription or medication orders for completeness.
    c. Compare and contrast the responsibilities of the pharmacist and the technician when preparing medications for distribution.
    d. Compare and contrast the responsibilities of the pharmacist and the technician when counseling patients on the use of medications, equipment, and devices.
    e. Compare and contrast the responsibilities of the pharmacist and the technician in the monitoring of drug therapy.

2. Discuss ethics in the conduct of all pharmacy practice activities.
    a. Define the term ethics.
    b. Compare and contrast ethics.
    c. Explain an ethical code that pertains to the work functions of pharmacists.
    d. Explain situations that may present ethical questions for the pharmacy technician.

3. Explain the roles of acute and nonacute care systems in delivering pharmaceutical care such as ambulatory and/or community, home care, long-term care, and so forth.
    a. Discuss the meaning of the term pharmaceutical care.
    b. Discuss the role of the technician in the delivery of pharmaceutical care.

4. Explain the benefits of obtaining technician certification.
    a. State the differences among certification, licensure, and registration.
    b. Explain the process by which one can become a certified pharmacy technician.

5. Review professional organizations.
    a. Explain the benefits of membership in the range of local, state, and national pharmacy organizations.
    b. Describe the local, state, and national pharmacy organizations that offer value for the pharmacy technician.

6. Recognize the importance of continuing professional self-development.   a. Explain the necessity for technicians to stay current with advances in pharmacy practice.

b. Discuss resources including Web sites, journals, newsletters, and educational conferences for staying current with advances in pharmacy practice such as automation, drug therapy, devices, and so forth.

7. Observe legal and ethical guidelines for safeguarding the confidentiality of patient information.
   a. Describe the legal and ethical guidelines pertaining to confidentiality of patient information.
   b. Explain situations in which patient confidentiality issues may arise.

STANDARDS

Standards based on the American Society of Health-System Pharmacists (ASHP)

PHM1   Assist the pharmacist in collecting, organizing, and evaluating information for direct patient care, medication use review, and departmental management.

PHM2   Receive and screen prescription or medication orders for completeness and authenticity.

PHM3   Prepare medications for distribution.

PHM5   Distribute medications.

PHM10   Control the inventory of medications, equipment, and devices according to an established plan.

PHM11   Assist the pharmacist in monitoring the practice site and/or service area for compliance with federal, state, and local laws; regulations; and professional standards.

PHM12   Maintain pharmacy equipment and facilities.

PHM13   Assist the pharmacist in preparing, storing, and distributing investigational medication products.

PHM15   Participate in the pharmacy department's process for preventing medication misadventures.

PHM16   Take personal responsibility for assisting the pharmacist in improving direct patient care.

PHM17   Demonstrate ethical conduct in all job-related activities.

PHM18   Maintain an image appropriate for the profession of pharmacy.

PHM22   Appreciate the benefits of active involvement in local, state, and national technician and other pharmacy organizations.

PHM23   Appreciate the value of obtaining technician certification.

PHM24   Understand the importance of and resources for staying current with changes in pharmacy practice.

PHM26   Maximize work efficiency through the use of technology.

PHM27   Efficiently solve problems commonly encountered in one's own work.

PHM28   Display a caring attitude toward patients in all aspects of job responsibilities.

PHM29   Maintain confidentiality of patient and proprietary business information.

PHM30   Understand direct patient care delivery systems in multiple practice settings.

PHM31   Efficiently manage one's work, whether performed alone or as part of a team.

PHM32   Function effectively as a member of the health-care team.

PHM33   Balance obligations to one's self, relationships, and work in a way that minimizes stress.

Related Academic Standards

R1   Interpret Graphic Information (forms, maps, reference sources)
R2   Words in Context (same and opposite meaning)
R3   Recall Information (details, sequence)
R4   Construct Meaning (main idea, summary and paraphrase, compare and contrast, cause and effect)
R5   Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
L1   Usage (pronoun, tense, subject-verb agreement, adjective, adverb)
L2   Sentence Formation (fragments, run-on, clarity)
L3   Paragraph Development (topic sentence, supporting sentence, sequence)

21ˢᵗ Century Skills

CS2   Financial, Economic, and Business Literacy
CS4   Information and Communication Skills
CS5   Thinking and Problem-Solving Skills
CS6   Interpersonal and Self-Directional Skills

SUGGESTED REFERENCES

American Pharmacists Association. (n.d.). Retrieved September 25, 2007, from http://www.aphanet.org

American Society of Health-System Pharmacists. (n.d.). Retrieved September 25, 2007, from http://www.ashp.org

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Course Name: Pharmacy Law

Course Abbreviation: PHM 1123

Classification: Vocational-Technical Core

Description: Federal and state laws pertaining to the practice of pharmacy. (3 sch: 3-hr lecture)

Prerequisite: None

Competencies and Suggested Objectives

1. Discuss the history of the regulatory bodies.
   a. State the need for the development of regulatory bodies.
   b. Discuss the various regulatory bodies and their roles.

2. Discuss the process for development and approval of new pharmaceuticals.
   a. Discuss the development process for a new pharmaceutical.
   b. Discuss the approval process for a new pharmaceutical.

3. Discuss the Mississippi Pharmacy Practice Act and Mississippi Board of Pharmacy regulations.
   a. Discuss the Mississippi Pharmacy Practice Act.
   b. Discuss the Mississippi Board of Pharmacy regulations.

4. Explain the effect of federal laws on the practice of pharmacy.
   a. Discuss the Controlled Substance Act.
   b. Discuss the Food, Drug, and Cosmetic Act.
   c. Discuss OBRA '90.
   d. Discuss HIPPA.

5. Follow protocol to assemble appropriate patient counseling information materials.
   a. Explain the importance of counseling in the use of medications.
   b. Describe the obligations of the pharmacist for counseling as prescribed in OBRA '90.
   c. Describe the obligations of the pharmacist for counseling as prescribed in HIPPA.

6. Describe established laws and protocols to select the appropriate product.
   a. Explain federal and state laws governing the substitution of drug products.
   b. Explain the purpose and use of a formulary (e.g., state, health system, buying group, etc.).
   c. Explain the influence that the formulary and/or policies of third party payers have on the selection of products.

STANDARDS

Standards based on the American Society of Health-System Pharmacists (ASHP)

PHM2   Receive and screen prescription or medication orders for completeness and authenticity.
PHM5   Distribute medications.
PHM10   Control the inventory of medications, equipment, and devices according to an established plan.

Postsecondary Pharmacy Technology

PHM11   Assist the pharmacist in monitoring the practice site and/or service area for compliance with federal, state, and local laws; regulations; and professional standards.

PHM13   Assist the pharmacist in preparing, storing, and distributing investigational medication products.

PHM14   Assist the pharmacist in the monitoring of medication therapy.

PHM15   Participate in the pharmacy department's process for preventing medication misadventures.

PHM17   Demonstrate ethical conduct in all job-related activities.

PHM22   Appreciate the benefits of active involvement in local, state, and national technician and other pharmacy organizations.

PHM29   Maintain confidentiality of patient and proprietary business information.

Related Academic Standards

R1   Interpret Graphic Information (forms, maps, reference sources)
R2   Words in Context (same and opposite meaning)
R3   Recall Information (details, sequence)
R4   Construct Meaning (main idea, summary and paraphrase, compare and contrast, cause and effect)
R5   Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
M1   Addition of Whole Numbers (no regrouping, regrouping)
M2   Subtraction of Whole Numbers (no regrouping, regrouping)
M3   Multiplication of Whole Numbers (no regrouping, regrouping)
M4   Division of Whole Numbers (no remainder, remainder)
A5   Measurement (money, time, temperature, length, area, volume)
L1   Usage (pronoun, tense, subject-verb agreement, adjective, adverb)
L2   Sentence Formation (fragments, run-on, clarity)
L3   Paragraph Development (topic sentence, supporting sentence, sequence)
L4   Capitalization (proper noun, titles)
L5   Punctuation (comma, semicolon)
L6   Writing Conventions (quotation marks, apostrophe, parts of a letter)
S1   Vowel (short, long)
S2   Consonant (variant spelling, silent letter)
S3   Structural Unit (root, suffix)

21st Century Skills

CS3   Civic Literacy
CS4   Information and Communication Skills
CS5   Thinking and Problem-Solving Skills
CS6   Interpersonal and Self-Directional Skills

Postsecondary Pharmacy Technology

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American Pharmacists Association. (n.d.). Retrieved September 25, 2007, from
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       http://ptcb.org

Strandberg, K. M. (2002). *Essentials of law and ethics for pharmacy technicians* (2nd ed.). Boca
       Raton, FL: CRC Press.

Course Name: Computer Applications in Pharmacy

Course Abbreviation: PHM 1212

Classification: Vocational-Technical Core

Description: A comprehensive understanding of pharmacy computer systems in addition to hands-on operation. (2 sch: 4-hr lab)

Prerequisite: None

Competencies and Suggested Objectives

1. Demonstrate keyboard literacy skills.
   a. Demonstrate ability to key a minimum of 30 words per minute (net).
   b. Demonstrate ability to utilize word processing software.

2. Use computer database systems employed in a variety of pharmacy practice environments to accurately and efficiently enter and retrieve data.
   a. Demonstrate skill in performing the basic functions for data entry.
   b. Demonstrate skill in performing the basic functions for information retrieval.

3. Use computer skills for new patient data entry.
   a. Demonstrate ability to enter allergies.
   b. Demonstrate ability to enter third party plan.
   c. Demonstrate ability to enter payment mode.

4. Use computer skills to process prescriptions.
   a. Accurately select data to enter into database.
   b. Utilize drug interaction screening procedures.

5. Recognize online data updates.
   a. Utilize price updates.
   b. Utilize third-party drug utilization reviews.
   c. Utilize new vendor software updates.

STANDARDS

Standards based on the American Society of Health-System Pharmacists (ASHP)

PHM1   Assist the pharmacist in collecting, organizing, and evaluating information for direct patient care, medication use review, and departmental management.

PHM2   Receive and screen prescription or medication orders for completeness and authenticity.

PHM3   Prepare medications for distribution.

PHM5   Distribute medications.

PHM8   Initiate, verify, assist in the adjudication of, and collect payment and/or initiate billing for pharmacy services and goods.

PHM26   Maximize work efficiency through the use of technology.

Postsecondary Pharmacy Technology

Related Academic Standards

R1   Interpret Graphic Information (forms, maps, reference sources)
R2   Words in Context (same and opposite meaning)
R3   Recall Information (details, sequence)
R4   Construct Meaning (main idea, summary and paraphrase, compare and contrast, cause and effect)
M1   Addition of Whole Numbers (no regrouping, regrouping)
M2   Subtraction of Whole Numbers (no regrouping, regrouping)
M3   Multiplication of Whole Numbers (no regrouping, regrouping)
M4   Division of Whole Numbers (no remainder, remainder)
M5   Decimals (addition, subtraction, multiplication, division)
M6   Fractions (addition, subtraction, multiplication, division)
M7   Integers (addition, subtraction, multiplication, division)
M8   Percents
M9   Algebraic Operations
A1   Numeration (ordering, place value, scientific notation)
A2   Number Theory (ratio, proportion)
A3   Data Interpretation (graph, table, chart, diagram)
A4   Pre-Algebra and Algebra (equations, inequality)
A5   Measurement (money, time, temperature, length, area, volume)
A7   Computation in Context (whole numbers, decimals, fractions, algebraic operations)
A8   Estimation (rounding, estimation)
L1   Usage (pronoun, tense, subject-verb agreement, adjective, adverb)
L2   Sentence Formation (fragments, run-on, clarity)
L3   Paragraph Development (topic sentence, supporting sentence, sequence)
L4   Capitalization (proper noun, titles)
L5   Punctuation (comma, semicolon)
L6   Writing Conventions (quotation marks, apostrophe, parts of a letter)
S1   Vowel (short, long)
S2   Consonant (variant spelling, silent letter)
S3   Structural Unit (root, suffix)

21st Century Skills

CS4   Information and Communication Skills
CS5   Thinking and Problem-Solving Skills
CS6   Interpersonal and Self-Directional Skills

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Course Name: Pharmacy Math and Dosage Calculations

Course Abbreviation: PHM 1314

Classification: Vocational-Technical Core

Description: Proper use of the metric, apothecary, and avoirdupois systems. Conversion between the systems. Application of formulas, calculations of fractional dosages, and methods of calculating dosages from all drug forms. Review of calculations dealing with ratio and proportion, percentages, ratio strength, reducing and enlarging formulas, and dilution and concentration problems. (4 sch: 4-hr lecture)

Prerequisite: Intermediate Algebra (MAT 1233) or higher

Competencies and Suggested Objectives

1. Accurately count or measure finished dosage forms as specified by the prescription or medication order.
   a. Accurately use the metric system to count and measure.
   b. Accurately use the avoirdupois system to count and measure.
   c. Accurately use the household system to count and measure.
   d. Demonstrate skill in the operation of common pharmaceutical measurement and weighing devices.

2. Accurately determine the correct amounts of ingredients for a compounded product.
   a. Given mathematical problems using Roman numerals, Arabic numerals, fractions, apothecary symbols, and decimals, perform the mathematical steps to solve for the correct answer.
   b. Given mathematical problems involving conversion of weights and measures and direct ratio and proportion, perform the mathematical steps to solve for the correct answer.
   c. Given mathematical problems involving reducing and enlarging formulas, perform the mathematical steps to solve for the correct answer.
   d. Given mathematical problems involving specific gravity, percent strength, weight-in-volume, weight-in-weight, and volume-in-volume, perform the mathematical steps to solve for the correct answer.
   e. Given mathematical problems involving ratio strength calculations for pharmaceutical preparations, perform the mathematical steps to solve for the correct answer.
   f. Given mathematical problems involving dilution and concentration, perform the mathematical steps to solve for the correct answer.
   g. Given mathematical problems involving dilution and concentration, perform the mathematical steps to solve for the correct answer using the allegation method.
   h. Given mathematical problems involving milliequivalents, perform the mathematical steps to solve for the correct answer.

STANDARDS

Standards based on the American Society of Health-System Pharmacists (ASHP)

PHM3   Prepare medications for distribution.
PHM4   Verify the measurements, preparation, and/or packaging of medications produced by other technicians.
PHM5   Distribute medications.
PHM15   Participate in the pharmacy department's process for preventing medication misadventures.

Related Academic Standards

R1   Interpret Graphic Information (forms, maps, reference sources)
R2   Words in Context (same and opposite meaning)
R3   Recall Information (details, sequence)
R4   Construct Meaning (main idea, summary and paraphrase, compare and contrast, cause and effect)
M1   Addition of Whole Numbers (no regrouping, regrouping)
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M8   Percents
M9   Algebraic Operations
A1   Numeration (ordering, place value, scientific notation)
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A3   Data Interpretation (graph, table, chart, diagram)
A4   Pre-Algebra and Algebra (equations, inequality)
A5   Measurement (money, time, temperature, length, area, volume)
A7   Computation in Context (whole numbers, decimals, fractions, algebraic operations)
A8   Estimation (rounding, estimation)
L1   Usage (pronoun, tense, subject-verb agreement, adjective, adverb)

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21st Century Skills

CS2   Financial, Economic, and Business Literacy
CS4   Information and Communication Skills
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http://ptcb.org

Course Name: Pharmacy Anatomy and Physiology

Course Abbreviation: PHM 1413

Classification: Vocational-Technical Core

Description: Study of body structure essential to safe and effective pharmaceutical care. (3 sch: 3-hr lecture)

Prerequisite: None

Competencies and Suggested Objectives

1. Discuss basic anatomy and physiology of the nervous system.
     a. Describe the basic anatomy of the nervous system.
     b. Explain the basic physiology of the nervous system.

2. Discuss basic anatomy and physiology of the endocrine system.
     a. Describe the basic anatomy of the endocrine system.
     b. Explain the basic physiology of the endocrine system.

3. Discuss basic anatomy and physiology of the skeletal system.
     a. Describe the basic anatomy of the skeletal system.
     b. Explain the basic physiology of the skeletal system.

4. Discuss basic anatomy and physiology of the muscular system.
     a. Describe the basic anatomy of the muscular system.
     b. Explain the basic physiology of the muscular system.

5. Discuss basic anatomy and physiology of the cardiovascular system.
     a. Describe the basic anatomy of the cardiovascular system.
     b. Explain the basic physiology of the cardiovascular system.

6. Discuss basic anatomy and physiology of the respiratory system.
     a. Describe the basic anatomy of the respiratory system.
     b. Explain the basic physiology of the respiratory system.

7. Discuss basic anatomy and physiology of the gastrointestinal system.
     a. Describe the basic anatomy of the gastrointestinal system.
     b. Explain the basic physiology of the gastrointestinal system.

8. Discuss basic anatomy and physiology of the renal system.
     a. Describe the basic anatomy of the renal system.
     b. Explain the basic physiology of the renal system.

9. Discuss basic anatomy and physiology of the reproductive system.
     a. Describe the basic anatomy of the reproductive system.
     b. Explain the basic physiology of the reproductive system.

10. Discuss basic anatomy and physiology of the immune system.
     a. Describe the basic anatomy of the immune system.
     b. Explain the basic physiology of the immune system.

11. Discuss basic anatomy and physiology of the eyes, ears, nose, and throat.
     a. Describe the basic anatomy of the eyes, ears, nose, and throat.
     b. Explain the basic physiology of the eyes, ears, nose, and throat.

12. Discuss basic anatomy and physiology of the dermatologic system.
    a.   Describe the basic anatomy of the dermatologic system.
    b.   Explain the basic physiology of the dermatologic system.

13. Discuss basic anatomy and physiology of the hematologic system.
    a.   Describe the basic anatomy of the hematologic system.
    b.   Explain the basic physiology of the hematologic system.

STANDARDS

Standards based on the American Society of Health-System Pharmacists (ASHP)

PHM34   Understand the use and side effects of prescription and nonprescription medications used to treat common disease states.

Related Academic Standards

R1   Interpret Graphic Information (forms, maps, reference sources)
R2   Words in Context (same and opposite meaning)
R3   Recall Information (details, sequence)
R4   Construct Meaning (main idea, summary and paraphrase, compare and contrast, cause and effect)
A3   Data Interpretation (graph, table, chart, diagram)
A5   Measurement (money, time, temperature, length, area, volume)

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21st Century Skills

CS4   Information and Communication Skills
CS6   Interpersonal and Self-Directional Skills

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Postsecondary Pharmacy Technology

Course Name: Pharmacology I

Course Abbreviation: PHM 1424

Classification: Vocational-Technical Core

Description: A study of human disease processes and rational pharmacotherapeutics relating to fluids and nutrients in the following body systems: nervous, endocrine, skeletal, muscular, gastrointestinal, reproductive, and immune. Indications, contraindications, mechanism of action, side effects, dosages, and methods of administration including how these principles can be utilized in pharmacy practice. (4 sch: 4-hr lecture)

Prerequisite: First Semester Pharmacy Technology Courses

Competencies and Suggested Objectives

1. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the nervous system.
    a. Explain the therapeutic effects of prescription and nonprescription medications commonly used to treat diseases of the nervous system.
    b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the nervous system.
    c. State the brand and generic names of prescription and nonprescription medications commonly used to treat diseases of the nervous system.
    d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the nervous system.
    e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the nervous system.
    f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the nervous system.

2. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the endocrine system.
    a. Explain the therapeutic effects of prescription and nonprescription medications commonly used to treat diseases of the endocrine system.
    b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the endocrine system.
    c. State the brand and generic names of prescription and nonprescription medications commonly used to treat diseases of the endocrine system.
    d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the endocrine system.
    e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the endocrine system.
    f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the endocrine system.

3. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the skeletal system.   a. Explain the therapeutic effects of prescription and nonprescription medications

commonly used to treat diseases of the skeletal system.
b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the skeletal system.
c. State the brand and generic names of prescription and nonprescription medications commonly used to treat diseases of the skeletal system.
d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the skeletal system.
e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the skeletal system.
f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the skeletal system.

4. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the muscular system.
a. Explain the therapeutic effects of prescription and nonprescription medications commonly used to treat diseases of the muscular system.
b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the muscular system.
c. State the brand and generic names of prescription and nonprescription medications commonly used to treat diseases of the muscular system.
d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the muscular system.
e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the muscular system.
f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the muscular system.

5. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the gastrointestinal system.
a. Explain the therapeutic effects of prescription and nonprescription medications commonly used to treat diseases of the gastrointestinal system.
b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the gastrointestinal system.
c. State the brand and generic names of prescription and nonprescription medications commonly used to treat diseases of the gastrointestinal system.
d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the gastrointestinal system.
e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the gastrointestinal system.
f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the gastrointestinal system.

6. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the reproductive system.
a. Explain the therapeutic effects of prescription and nonprescription medications commonly used to treat diseases of the reproductive system.
b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the reproductive system.
c. State the brand and generic names of prescription and nonprescription medications

commonly used to treat diseases of the reproductive system.

    d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the reproductive system.

    e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the reproductive system.

    f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the reproductive system.

7. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the immune system.

    a. Explain the therapeutic effects of prescription and nonprescription medications commonly used to treat diseases of the immune system.

    b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the immune system.

    c. State the brand and generic names of prescription and nonprescription medications commonly used to treat diseases of the immune system.

    d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the immune system.

    e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the immune system.

    f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the immune system.

STANDARDS

Standards based on the American Society of Health-System Pharmacists (ASHP)

PHM7   Assist the pharmacist in the identification of patients who desire or require counseling to optimize the use of medications, equipment, and devices.

PHM14   Assist the pharmacist in the monitoring of medication therapy.

PHM15   Participate in the pharmacy department's process for preventing medication misadventures.

PHM34   Understand the use and side effects of prescription and nonprescription medications used to treat common disease states.

PHM35   Assist the pharmacist in assuring the quality of all pharmaceutical services.

Related Academic Standards

R1   Interpret Graphic Information (forms, maps, reference sources)

R2   Words in Context (same and opposite meaning)

R3   Recall Information (details, sequence)

R4   Construct Meaning (main idea, summary and paraphrase, compare and contrast, cause and effect)

R5   Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)

M1   Addition of Whole Numbers (no regrouping, regrouping)

M2   Subtraction of Whole Numbers (no regrouping, regrouping)

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M3 Multiplication of Whole Numbers (no regrouping, regrouping)
M4 Division of Whole Numbers (no remainder, remainder)
M5 Decimals (addition, subtraction, multiplication, division)
M6 Fractions (addition, subtraction, multiplication, division)
M8 Percents
M9 Algebraic Operations
A1 Numeration (ordering, place value, scientific notation)
A2 Number Theory (ratio, proportion)
A3 Data Interpretation (graph, table, chart, diagram)
A4 Pre-Algebra and Algebra (equations, inequality)
A5 Measurement (money, time, temperature, length, area, volume)
A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)
A8 Estimation (rounding, estimation)
S3 Structural Unit (root, suffix)

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21st Century Skills

CS4 Information and Communication Skills
CS6 Interpersonal and Self-Directional Skills

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Course Name: Pharmaceutical Compounding

Course Abbreviation: PHM 1512

Classification: Vocational-Technical Core

Description: Concepts of design, preparation, use, and evaluation of solid and semi-solid dosage forms. Specific topics include powders, tablets, capsules, coated dosage forms, suspensions, emulsions, magmas, gels, lotions, ointments, creams, pastes, suppositories, transdermal systems, sustained release products, and novel drug delivery systems. Exercises in computer application, prescription, and physician order interpretation, and the introduction of extemporaneous compounding are performed in the laboratory. (2 sch: 1-hr lecture, 2-hr lab)

Prerequisite: Pharmacy Math and Dosage Calculations (PHM 1314)

Competencies and Suggested Objectives

1. Discuss the need for compounding pharmaceuticals.
    a. Define the term compounding.
    b. Define the term manufacturing.
    c. Differentiate between compounding and manufacturing.
    d. Explain why certain medications must be compounded.

2. Given a weighing or counting device used at a specific site, accurately calibrate the device.
    a. Describe the equipment and pharmacy devices common to pharmacy practice.
    b. Describe the term calibration as it refers to the equipment commonly used in pharmacy practice.
    c. Given a particular type of weighing device, accurately calibrate the device.
    d. Given a particular counting device, accurately calibrate the device.

3. Compound nonsterile products using appropriate technique.
    a. Demonstrate the appropriate technique to compound ointments.
    b. Demonstrate the appropriate technique to compound suspensions.
    c. Demonstrate the appropriate technique to compound solutions.
    d. Demonstrate the appropriate technique to compound emulsions.
    e. Demonstrate the appropriate technique to compound capsules.
    f. Demonstrate the appropriate technique to compound suppositories.

4. Apply the principles of quality assurance to all pharmaceutical care activities.
    a. Describe quality assurance methods.
    b. Demonstrate competency in weighing and/or measuring compounding ingredients.
    c. Accurately calculate components.
    d. Accurately record information on permanent compounding record.

STANDARDS

Standards based on the American Society of Health-System Pharmacists (ASHP)

PHM3   Prepare medications for distribution.

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PHM4   Verify the measurements, preparation, and/or packaging of medications produced by other technicians.
PHM5   Distribute medications.
PHM7   Assist the pharmacist in the identification of patients who desire or require counseling to optimize the use of medications, equipment, and devices.
PHM35   Assist the pharmacist in assuring the quality of all pharmaceutical services.

Related Academic Standards

R1   Interpret Graphic Information (forms, maps, reference sources)
R2   Words in Context (same and opposite meaning)
R3   Recall Information (details, sequence)
M1   Addition of Whole Numbers (no regrouping, regrouping)
M2   Subtraction of Whole Numbers (no regrouping, regrouping)
M3   Multiplication of Whole Numbers (no regrouping, regrouping)
M4   Division of Whole Numbers (no remainder, remainder)
M5   Decimals (addition, subtraction, multiplication, division)
M6   Fractions (addition, subtraction, multiplication, division)
M7   Integers (addition, subtraction, multiplication, division)
M8   Percents
M9   Algebraic Operations
A1   Numeration (ordering, place value, scientific notation)
A2   Number Theory (ratio, proportion)
A3   Data Interpretation (graph, table, chart, diagram)
A4   Pre-Algebra and Algebra (equations, inequality)
A5   Measurement (money, time, temperature, length, area, volume)
A7   Computation in Context (whole numbers, decimals, fractions, algebraic operations)
A8   Estimation (rounding, estimation)
S3   Structural Unit (root, suffix)

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21st Century Skills

CS2   Financial, Economic, and Business Literacy
CS5   Thinking and Problem-Solving Skills
CS6   Interpersonal and Self-Directional Skills

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American Pharmacists Association. (n.d.). Retrieved September 25, 2007, from
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Course Name: Pharmacy Practice

Course Abbreviation: PHM 1525

Classification: Vocational-Technical Core

Description: Medication distribution systems utilized in retail and hospital pharmacy, including processing of individual prescriptions, floor stock distribution, unit dose systems, and IV admixture. Topics discussed include hazardous waste handling, infection control, principles of quality assurance, and equipment use and maintenance. Exercises in packaging, unit dose functions, aseptic compounding, parental admixture, and use of computer database systems will be performed in the laboratory. (5 sch: 3-hr lecture, 4-hr lab)

Prerequisite: First Semester Pharmacy Technology Courses

Competencies and Suggested Objectives

1. Describe how to assemble the correct ingredients for sterile or nonsterile products that require compounding.
    a. Define the terms sterile and nonsterile as applied to pharmacy.
    b. Identify nine key areas that define good manufacturing practices.
    c. Recognize the importance of written procedures for production and process control.
    d. Identify the equipment and supplies used when preparing sterile products.

2. Describe how biological safety cabinets are used to assure sterility in product compounding.
    a. Describe the underlying principle of laminar flow biological cabinets.
    b. Explain how laminar flow biological safety cabinets contribute to infection control.
    c. Explain the logic of each step in the proper procedure for cleaning a laminar flow biological safety cabinet.
    d. Identify disinfectant agents for proper cleaning.
    e. Demonstrate the cleaning technique for laminar flow biological safety cabinets.
    f. List the differences between a horizontal laminar flow biological safety cabinet and a vertical laminar flow hood.

3. Describe and demonstrate how to compound sterile products using appropriate techniques, equipment, and devices.
    a. Explain the basic manipulations needed to prepare a sterile product by using aseptic technique.
    b. Explain the logic of each of the steps of sterile technique.
    c. Explain therapeutic, pharmaceutical, and chemical incompatibility.
    d. Explain how the effects of incompatibilities can be overcome when compounding sterile products.
    e. Demonstrate the proper use of equipment and devices used in compounding sterile products.
    f. Explain and use horizontal and vertical laminar flow hoods.

4. Discuss and demonstrate policies and procedures for sanitation management, hazardous waste handling (needles, etc.), and infection control (protective clothing, etc.).   a. Explain the need for sanitation management in the pharmacy setting.

    b.   Define hazardous waste.

    c.   Define infection control.

    d.   Explain OSHA regulations as they pertain to pharmacy practice.

    e.   Explain state regulations as they pertain to the handling of hazardous waste and infection control.

    f.   Identify the proper personal protection attire and supplies for preparing sterile products.

    g.   Explain institutional policies and procedures as they apply to hazardous and waste management and infection control.

    h.   Demonstrate proper disposal of hazardous waste consistent with statutory regulations.

    i.   Identify and demonstrate the wear of personal protective equipment.

5.   Describe and demonstrate how to compound cytotoxic and other hazardous drug products using appropriate techniques.

    a.   Explain risks involved in the preparation and handling of cytotoxic and other hazardous drug products.

    b.   Explain the supplies and procedures used to provide personal protection from hazardous substances.

    c.   Explain the logic of each of the steps in cytotoxic or other hazardous drug product preparation techniques.

    d.   Discuss the underlying principle of Class II biological safety cabinets and their use in the preparation of hazardous drugs.

    e.   Discuss safe and effective labeling, storage, and transportation practices essential to prevent accidental exposure to hazardous drugs.

    f.   Demonstrate proper procedures for compounding cytotoxic and other hazardous drug products.

    g.   Demonstrate skill in cleaning up a cytotoxic or other hazardous waste spill.

6.   Efficiently deliver the correct medication, equipment, device, or supplies to the correct patient or patient's representative.

    a.   Explain the importance of getting the right medication, equipment, device, or supplies to the patient or patient's representative.

    b.   Describe the various systems used to distribute medications.

    c.   Describe standard policies and procedures for recording the distribution of prescription medications.

    d.   Describe standard policies and procedures for recording the distribution of controlled substances.

    e.   Operate automated distribution systems.

    f.   Follow established policies and procedures to record the distribution of prescription medications.

    g.   Follow established policies and procedures to record the distribution of controlled substances.

7.   Apply the principles of quality assurance to all pharmaceutical care activities.

    a.   Describe and use quality assurance.

    b.   Define quality control system.

    c.   Identify causes or factors that contribute to medication errors.

    d.   List examples of common medication errors.

    e.   Discuss the possible consequences of actual medication errors.

f.   Describe the steps to be taken when an error has been identified.
g.   Describe the quality assurance recommendations for product integrity and patient safety in sterile product preparation.
h.   Explain how sterile products are grouped into three levels of risk to the patient, and identify the risk level of commonly prepared products.
i.   Explain the mechanism for validation of aseptic technique procedures that result in sterile products of acceptable quality.
j.   Explain end-product evaluation.
k.   Explain how adverse drug reaction reports are used in quality assurance programs.
l.   Describe and demonstrate prospective drug use evaluations and retrospective drug use evaluations.

8. Describe and demonstrate how computer database systems are employed in a variety of pharmacy practice environments to accurately and efficiently enter and retrieve data.
a.   Describe how automation impacts the drug distribution process.
b.   List the types of computer-generated reports utilized by pharmacy personnel in an institutional pharmacy setting.
c.   Describe how technology is used to monitor the clinical status of patients.
d.   Describe the difference between decentralized and centralized automated dispensing systems.
e.   Describe the limitations of automated dispensing systems.
f.   Discuss the advantages of paperless charting.
g.   Demonstrate use of a typical database used to support the pharmacy functions of the acute care practice environment.
h.   Demonstrate use of a typical database used to support the pharmacy functions of the nonacute care practice environment.

9. Maintain a clean and neat work environment.
a.   Describe a clean room for parenteral drug compounding.
b.   Demonstrate clean room design.
c.   Set up materials to demonstrate a clean and neat work environment.
d.   Explain how pharmacies fulfill statutory requirements for cleanliness and orderliness.

10. Accurately calibrate a weighing or counting device, fluid compounder, or syringe pump.
a.   Describe the equipment and pharmacy devices common to pharmacy practice.
b.   Describe the term calibration as it refers to the equipment commonly used in pharmacy practice.
c.   Given a particular type of weighing device, accurately calibrate the device.
d.   Given a particular type of compounder, accurately calibrate the device.
e.   Given a particular type of pump, accurately calibrate the pump.

11. Follow manufacturers' guidelines in troubleshooting, maintaining, and repairing electronic devices used by the pharmacy in the preparation and dispensing of medications.
a.   Explain the role of electronic devices in the delivery of pharmaceutical care.
b.   Explain the role of equipment maintenance to assure the intended outcome.
c.   Disassemble equipment for cleaning.
d.   Perform routine maintenance on equipment.

12. Assemble the correct ingredients for sterile or nonsterile products that require compounding.
a.   Demonstrate the proper procedure for maintaining the sterility of materials being

assembled for compounding a sterile product.
   b. Demonstrate the proper procedure for compounding a sterile or nonsterile product.
13. Assist the pharmacist in the administration of immunizations.
   a. Explain how Mississippi laws and regulations determine what activities associated with the administration of immunizations can be delegated by pharmacists to technicians.
14. Verify the measurements, preparation, and/or packaging of medications produced by other technicians.
   a. Explain how Mississippi laws and regulations determine what activities associated with verifying the measurements, preparation, and/or packaging of medications produced by other technicians can be delegated by pharmacists to technicians.

STANDARDS

Standards based on the American Society of Health-System Pharmacists (ASHP)

PHM1   Assist the pharmacist in collecting, organizing, and evaluating information for direct patient care, medication use review, and departmental management.
PHM2   Receive and screen prescription or medication orders for completeness and authenticity.
PHM3   Prepare medications for distribution.
PHM4   Verify the measurements, preparation, and/or packaging of medications produced by other technicians.
PHM5   Distribute medications.
PHM6   Assist the pharmacist in the administration of immunizations.
PHM7   Assist the pharmacist in the identification of patients who desire or require counseling to optimize the use of medications, equipment, and devices.
PHM8   Initiate, verify, assist in the adjudication of, and collect payment and/or initiate billing for pharmacy services and goods.
PHM9   Purchase pharmaceuticals, devices, and supplies according to an established purchasing program.
PHM10   Control the inventory of medications, equipment, and devices according to an established plan.
PHM11   Assist the pharmacist in monitoring the practice site and/or service area for compliance with federal, state, and local laws; regulations; and professional standards.
PHM12   Maintain pharmacy equipment and facilities.
PHM13   Assist the pharmacist in preparing, storing, and distributing investigational medication products.
PHM14   Assist the pharmacist in the monitoring of medication therapy.
PHM15   Participate in the pharmacy department's process for preventing medication misadventures.
PHM16   Take personal responsibility for assisting the pharmacist in improving direct patient care.
PHM17   Demonstrate ethical conduct in all job-related activities.
PHM18   Maintain an image appropriate for the profession of pharmacy.

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PHM22   Appreciate the benefits of active involvement in local, state, and national technician and other pharmacy organizations.
PHM26   Maximize work efficiency through the use of technology.
PHM28   Display a caring attitude toward patients in all aspects of job responsibilities.
PHM29   Maintain confidentiality of patient and proprietary business information.
PHM30   Understand direct patient care delivery systems in multiple practice settings.
PHM31   Efficiently manage one's work whether performed alone or as part of a team.
PHM32   Function effectively as a member of the health-care team.
PHM35   Assist the pharmacist in assuring the quality of all pharmaceutical services.

Related Academic Standards

R1   Interpret Graphic Information (forms, maps, reference sources)
R2   Words in Context (same and opposite meaning)
R3   Recall Information (details, sequence)
R4   Construct Meaning (main idea, summary and paraphrase, compare and contrast, cause and effect)
R5   Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
M1   Addition of Whole Numbers (no regrouping, regrouping)
M2   Subtraction of Whole Numbers (no regrouping, regrouping)
M3   Multiplication of Whole Numbers (no regrouping, regrouping)
M4   Division of Whole Numbers (no remainder, remainder)
M5   Decimals (addition, subtraction, multiplication, division)
M6   Fractions (addition, subtraction, multiplication, division)
M7   Integers (addition, subtraction, multiplication, division)
M8   Percents
M9   Algebraic Operations
A1   Numeration (ordering, place value, scientific notation)
A2   Number Theory (ratio, proportion)
A3   Data Interpretation (graph, table, chart, diagram)
A4   Pre-Algebra and Algebra (equations, inequality)
A5   Measurement (money, time, temperature, length, area, volume)
A7   Computation in Context (whole numbers, decimals, fractions, algebraic operations)
A8   Estimation (rounding, estimation)
L1   Usage (pronoun, tense, subject-verb agreement, adjective, adverb)
S3   Structural Unit (root, suffix)

21ˢᵗ Century Skills

CS2   Financial, Economic, and Business Literacy
CS3   Civic Literacy
CS4   Information and Communication Skills
CS5   Thinking and Problem-Solving Skills
CS6   Interpersonal and Self-Directional Skills

Postsecondary Pharmacy Technology

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Course Name: Pharmacology II

Course Abbreviation: PHM 2434

Classification: Vocational-Technical Core

Description: A study of human disease processes and rational pharmacotherapeutics relating to the cardiovascular, respiratory, renal, hematologic, and dermatologic systems as well as eyes, ears, nose, and throat. Indications, contraindications, mechanism of action, side effects, dosages, and methods of administration including how these principles can be utilized in pharmacy practice. (4 sch: 4-hr lecture)

Prerequisite: First three semesters of Pharmacy Technology courses

Competencies and Suggested Objectives

1. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the cardiovascular system.
    a. Explain the therapeutic effects of prescription and nonprescription medications commonly used to treat diseases of the cardiovascular system.
    b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the cardiovascular system.
    c. State the brand and generic names of prescription and nonprescription medications commonly used to treat diseases of the cardiovascular system.
    d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the cardiovascular system.
    e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the cardiovascular system.
    f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the cardiovascular system.

2. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the respiratory system.
    a. Explain the therapeutic effects of prescription and nonprescription medications commonly used to treat diseases of the respiratory system.
    b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the respiratory system.
    c. State the brand and generic names of prescription and nonprescription medications commonly used to treat diseases of the respiratory system.
    d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the respiratory system.
    e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the respiratory system.
    f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the respiratory system.

3. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the renal system.   a. Explain the therapeutic effects of prescription and nonprescription medications

commonly used to treat diseases of the renal system.

b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the renal system.

c. State the brand and generic names of prescription and nonprescription medications commonly used to treat diseases of the renal system.

d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the renal system.

e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the renal system.

f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the renal system.

4. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the eyes, ears, nose, and throat system.

a. Explain the therapeutic effects of prescription and nonprescription medications commonly used to treat diseases of the eyes, ear, nose, and throat system.

b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the eyes, ears, nose, and throat system.

c. State the brand and generic names of prescription and nonprescription medications commonly used to treat diseases of the eyes, ears, nose, and throat system.

d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the eyes, ears, nose, and throat system.

e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the eyes, ears, nose, and throat system.

f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the eyes, ears, nose, and throat system.

5. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the dermatologic system.

a. Explain the therapeutic effects of prescription and nonprescription medications commonly used to treat diseases of the dermatologic system.

b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the dermatologic system.

c. State the brand and generic names of prescription and nonprescription medications commonly used to treat diseases of the dermatologic system.

d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the dermatologic system.

e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the dermatologic system.

f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the dermatologic system.

6. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the hematologic system.

a. Explain the therapeutic effects of prescription and nonprescription medications commonly used to treat diseases of the hematologic system.

b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the hematologic system.

c. State the brand and generic names of prescription and nonprescription medications

commonly used to treat diseases of the hematologic system.
  d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the hematologic system.
  e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the hematologic system.
  f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the hematologic system.

STANDARDS

Standards based on the American Society of Health-System Pharmacists (ASHP)

PHM7 Assist the pharmacist in the identification of patients who desire or require counseling to optimize the use of medications, equipment, and devices.
PHM14 Assist the pharmacist in the monitoring of medication therapy.
PHM15 Participate in the pharmacy department's process for preventing medication misadventures.
PHM34 Understand the use and side effects of prescription and nonprescription medications used to treat common disease states.
PHM35 Assist the pharmacist in assuring the quality of all pharmaceutical services.

Related Academic Standards

R1 Interpret Graphic Information (forms, maps, reference sources)
R2 Words in Context (same and opposite meaning)
R3 Recall Information (details, sequence)
R4 Construct Meaning (main idea, summary and paraphrase, compare and contrast, cause and effect)
R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
M1 Addition of Whole Numbers (no regrouping, regrouping)
M2 Subtraction of Whole Numbers (no regrouping, regrouping)
M3 Multiplication of Whole Numbers (no regrouping, regrouping)
M4 Division of Whole Numbers (no remainder, remainder)
M5 Decimals (addition, subtraction, multiplication, division)
M6 Fractions (addition, subtraction, multiplication, division)
M7 Integers (addition, subtraction, multiplication, division)
M8 Percents
M9 Algebraic Operations
A1 Numeration (ordering, place value, scientific notation)
A2 Number Theory (ratio, proportion)
A3 Data Interpretation (graph, table, chart, diagram)
A4 Pre-Algebra and Algebra (equations, inequality)
A5 Measurement (money, time, temperature, length, area, volume)
A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)
A8 Estimation (rounding, estimation)
S3 Structural Unit (root, suffix)

Postsecondary Pharmacy Technology

21st Century Skills

CS4   Information and Communication Skills
CS5   Thinking and Problem-Solving Skills
CS6   Interpersonal and Self-Directional Skills

SUGGESTED REFERENCES

American Pharmacists Association. (n.d.). Retrieved September 25, 2007, from
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        Publishing.

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Pharmacy Technician Certification Board. (n.d.). Retrieved September 25, 2007, from
        http://ptcb.org

Course Name: Nonprescription Medications and Devices

Course Abbreviation: PHM 2534

Classification: Vocational-Technical Core

Description: Reviews the categories of the over-the-counter medications, explains the types and procedures of home monitoring equipment, and provides guidelines for patient counseling. Explains durable and surgical or non-durable medical products. Highlights concepts of vitamins, herbs, and nutritional supplements and the nontraditional treatment options. (4 sch: 4-hr lecture)

Prerequisite: First three semesters of Pharmacy Technology courses

Competencies and Suggested Objectives

1. Recognize the use of nonprescription medications used to treat common diseases.
   a. State the route of administration of nonprescription medications used to treat common diseases.
   b. State the dosage forms of nonprescription medications used to treat common diseases.
   c. State the side effects of nonprescription medications used to treat common diseases.

2. Demonstrate skill in monitoring procedures selected by the program for training.
   a. Demonstrate skill in monitoring procedures such as finger-stick blood draw for glucose monitoring and cholesterol screening.
   b. Demonstrate skill in monitoring procedures such as vital signs.
   c. Demonstrate skill in using respiratory therapy aids such as nebulizers, spacers, and incentive spirometers.
   d. Demonstrate the proper method for "sizing" crutches, canes, and walkers.
   e. Discuss the differences in urine and blood test strips, blood-glucose machines, and syringes.
   f. Demonstrate knowledge of ostomy and colostomy supplies.
   g. Demonstrate knowledge of incontinence supplies.
   h. Demonstrate the proper method for sizing of orthopedic devices.
   i. Demonstrate the proper method for sizing antiembolism or support hosiery.

3. Discuss the use of nutritional aids and their role in self-care.
   a. Recognize nutritional supplements (Ensure, etc.) and disease states.
   b. Utilize the literature to inform patients concerning vitamins, herbs, and so forth.

4. Identify aids used with behavior modification to achieve a desired outcome.
   a. Utilize literature to inform patient concerning smoking cessation products.
   b. Utilize literature to inform patient concerning diet products.

5. Recognize established policies and procedures for placing pharmaceuticals, durable medical equipment, devices, and supplies in inventory under proper storage conditions.
   a. Identify items requiring special handling and storage.
   b. Demonstrate ability to stock items in appropriate storage locations.

STANDARDS

Standards based on the American Society of Health-System Pharmacists (ASHP)

PHM14   Assist the pharmacist in the monitoring of medication therapy.
PHM34   Understand the use and side effects of prescription and nonprescription medications
               used to treat common disease states.
PHM35   Assist the pharmacist in assuring the quality of all pharmaceutical services.

Related Academic Standards

R1   Interpret Graphic Information (forms, maps, reference sources)
R2   Words in Context (same and opposite meaning)
R3   Recall Information (details, sequence)
R4   Construct Meaning (main idea, summary and paraphrase, compare and contrast, cause and
         effect)
R5   Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
M1   Addition of Whole Numbers (no regrouping, regrouping)
M2   Subtraction of Whole Numbers (no regrouping, regrouping)
M3   Multiplication of Whole Numbers (no regrouping, regrouping)
M4   Division of Whole Numbers (no remainder, remainder)
M5   Decimals (addition, subtraction, multiplication, division)
M6   Fractions (addition, subtraction, multiplication, division)
M7   Integers (addition, subtraction, multiplication, division)
M8   Percents
M9   Algebraic Operations
A1   Numeration (ordering, place value, scientific notation)
A2   Number Theory (ratio, proportion)
A3   Data Interpretation (graph, table, chart, diagram)
A4   Pre-Algebra and Algebra (equations, inequality)
A5   Measurement (money, time, temperature, length, area, volume)
A7   Computation in Context (whole numbers, decimals, fractions, algebraic operations)
A8   Estimation (rounding, estimation)
S3   Structural Unit (root, suffix)

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21st Century Skills

CS4   Information and Communication Skills
CS5   Thinking and Problem-Solving Skills
CS6   Interpersonal and Self-Directional Skills

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American Pharmacists Association. (n.d.). Retrieved September 25, 2007, from
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Pray, W. S. (2006). *Nonprescription product therapeutics* (2nd ed.). Philadelphia, PA: Lippincott
Williams & Wilkins.

Course Name: Drug Information Research

Course Abbreviation: PHM 2543

Classification: Vocational-Technical Core

Description: The concepts of obtaining pertinent patient information and data collection including patient medical records, patient interviews, drug use reviews, literature resources, and problem solving. (3 sch: 2-hr lecture, 2-hr lab)

Prerequisite: First three semesters of Pharmacy Technology courses

Competencies and Suggested Objectives

1. Compare and contrast the responsibilities of the pharmacist and the technician in the collection of patient-specific information.
    a. Explain the purposes for which pharmacists collect patient-specific information.
    b. Explain the technician's role in the collection of patient-specific information.

2. When presented with a specific patient case, collect pertinent patient information for use by the pharmacist from the medical chart, patient profile, or medical record with efficiency and accuracy.
    a. State the definitions of medical terms commonly used in the range of patient care settings.
    b. When given a list of commonly used medical terms, write the accepted abbreviation for each, or when given the abbreviation, write the term.
    c. Describe the type of information that is contained in each section of a patient medical chart or record.
    d. Use knowledge of the organization of patient medical charts and records to efficiently locate a specific piece of information.
    e. Describe the categories of information kept in patient profiles.
    f. Use knowledge of the organization of patient profiles to locate a specific piece of information.

3. Effectively interview patients, their representatives, or their caregivers to collect pertinent patient information for use by the pharmacist.
    a. Discuss the framing of questions so that they elicit the desired patient-specific information from the patient.
    b. Effectively query other health-care professionals to collect pertinent patient information for use by the pharmacist.

4. When collecting patient-specific information for use by the pharmacist, identify situations where the patient requires the attention of the pharmacist.
    a. State potential problem situations to which the technician should alert the pharmacist.
    b. State specific types of questions from patients or health-care providers to which an answer by the technician would be inappropriate.

5. Collect data for drug use review.
    a. Explain the purpose of a drug use review.
    b. Explain the structure of a drug use review.
    c. Utilize online and print-based resources to collect data.

6. Compare and contrast the responsibilities of the pharmacist and the technician in the monitoring of drug therapy.
   a. Explain the purpose of monitoring a patient's drug therapy.
   b. Use knowledge of typical computer database systems employed in a variety of pharmacy practice environments to accurately and efficiently enter and retrieve data.
7. Demonstrate consistent use of a systematic approach to solving problems encountered in one's work as a technician.
   a. Explain the kinds of problems encountered in the work of the technician that benefit from the use of a systematic problem solving approach.
   b. Explain a systematic approach to problem solving.
   c. Explain the usefulness of building consensus.
   d. Explain the concept of consensus building.
8. Demonstrate the ability to conduct a drug literature research.
   a. Use online and print-based resources to collect pertinent information.
   b. Organize the information in a concise, logical sequence.
   c. Prepare the written report using a data processor.

STANDARDS

Standards based on the American Society of Health-System Pharmacists (ASHP)

PHM1   Assist the pharmacist in collecting, organizing, and evaluating information for direct patient care, medication use review, and departmental management.

PHM7   Assist the pharmacist in the identification of patients who desire or require counseling to optimize the use of medications, equipment, and devices.

PHM13   Assist the pharmacist in preparing, storing, and distributing investigational medication products.

PHM15   Participate in the pharmacy department's process for preventing medication misadventures.

PHM24   Understand the importance of and resources for staying current with changes in pharmacy practice.

PHM25   Communicate clearly when speaking or writing.

PHM34   Understand the use and side effects of prescription and nonprescription medications used to treat common disease states.

Related Academic Standards

R1   Interpret Graphic Information (forms, maps, reference sources)
R2   Words in Context (same and opposite meaning)
R3   Recall Information (details, sequence)
R4   Construct Meaning (main idea, summary and paraphrase, compare and contrast, cause and effect)
R5   Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
A3   Data Interpretation (graph, table, chart, diagram)
L1   Usage (pronoun, tense, subject-verb agreement, adjective, adverb)

Postsecondary Pharmacy Technology

L2   Sentence Formation (fragments, run-on, clarity)
L3   Paragraph Development (topic sentence, supporting sentence, sequence)
L4   Capitalization (proper noun, titles)
L5   Punctuation (comma, semicolon)
L6   Writing Conventions (quotation marks, apostrophe, parts of a letter)
S1   Vowel (short, long)
S2   Consonant (variant spelling, silent letter)
S3   Structural Unit (root, suffix)

21st Century Skills

CS2   Financial, Economic, and Business Literacy
CS4   Information and Communication Skills
CS5   Thinking and Problem-Solving Skills
CS6   Interpersonal and Self-Directional Skills

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American Pharmacists Association. (n.d.). Retrieved September 25, 2007, from
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U. S. Food and Drug Administration. (n.d.). Retrieved September 26, 2007, from
        http://www.fda.gov

Course Name: Practicum I

Course Abbreviation: PHM 2614

Classification: Vocational-Technical Core

Description: Application of pharmacist technician concepts in community and hospital pharmacy, home health, and extended care settings. The student will be placed in a community or institutional setting as the setting is available. Emphasis is placed on functions associated with medication distribution systems. (4 sch: 12-hr of clinical)

Prerequisite: Second semester Pharmacy Technology courses

Competencies and Suggested Objectives

1. Maintain appropriate dress and behavior standards in the community or institutional setting.
    a. Act ethically in the conduct of all pharmacy practice activities.
    b. Dress in attire that follows the site's dress code.
    c. Maintain personal hygiene.
    d. Consistently maintain personal self-control and decorum.

2. Use appropriate communication to collect pertinent information for use by the pharmacist in the community or institutional setting.
    a. When presented with a specific patient case, collect pertinent patient information for use by the pharmacist from the medical chart, patient profile, or medical record with efficiency and accuracy.
    b. Interview patients, their representatives, or their caregivers to collect pertinent patient information for use by the pharmacist.
    c. Query other health-care professionals to collect pertinent patient information for use by the pharmacist.
    d. Use effective communication skills to elicit from the patient or caregiver the desire for the pharmacist to provide counseling on the use of medications.
    e. Follow protocol to assemble appropriate patient information materials.

3. Address all communication at an appropriate level in the community or institutional setting.
    a. Use listening skills consistently in the performance of job functions.
    b. Use effective strategies for communicating with patients who are non-English speakers or who are impaired (e.g., blind, deaf, cognitively impaired, illiterate).
    c. Combine compassion with the delivery of pharmacy services.
    d. Address all communications with a patient or his or her caregiver in a respectful manner.
    e. Observe legal and ethical guidelines for safeguarding the confidentiality of patient information.

4. Receive and screen prescription or medication orders for completeness in the community or institutional setting.
    a. Use first-person and electronic systems to receive prescription or medication orders.
    b. When presented with a prescription or medication order, accurately and efficiently

assess for completeness.
   c. Efficiently secure information to complete a prescription or medication order.

5. Prepare medications for distribution in the community or institutional setting.
   a. Accurately create a new patient profile, or enter data into an existing profile according to an established manual procedure or electronic procedure.
   b. Follow established laws and protocols to select the appropriate product.
   c. Use knowledge of a site's storage system to efficiently secure the prescribed medications or devices from inventory.
   d. Accurately count or measure finished dosage as specified by the prescription or medication order.
   e. Assemble the correct ingredients for sterile products that require compounding.
   f. Determine the correct amounts of ingredients for a compounded product.
   g. Follow safety policies and procedures in the preparation of all medications.
   h. Follow safety policies and procedures in the disposal of all hazardous and nonhazardous wastes generated during medication preparation.
   i. Package the product in the appropriate type and size of container using a manual process or automated system.
   j. Follow an established manual procedure or electronic procedure to generate accurate and complete product labels.
   k. Affix the appropriate primary and auxiliary labels to containers.
   l. Follow established policies and procedures for recording the preparation of bulk, unit dose, and special doses of medications prepared for immediate use or in anticipation of future use.
   m. Follow established policies and procedures for recording the preparation of controlled substances.
   n. Follow the manufacturer's recommendation and/or the pharmacy's guidelines for storage of all medications prior to distribution.

6. Distribute medications in the community or institutional setting.
   a. Deliver the correct medication, equipment, device, or supplies to the correct patient or patient's representative.
   b. Follow established policies and procedures to record the distribution of prescription medications.
   c. Follow established policies and procedures to record the distribution of controlled substances.

7. Collect payment and/or initiate billing for pharmacy services and goods in the community setting.
   a. Identify the customer's or patient's method of payment for a prescription or medication order and associated services.
   b. Use electronic systems to verify third-party coverage for a prescription medication order.
   c. Verify third-party coverage for a prescription or medication order by phone.
   d. Accurately complete third-party claims forms.
   e. Accurately record the receipt of payment for pharmaceutical goods and services.
   f. Accurately determine those items that are taxable.
   g. Use effective interpersonal skills to deal with customers or patients when obtaining payment for pharmacy goods and services.

h. Determine payment due the health system for medication orders.

8. Control the inventory of medication, equipment, and devices according to an established plan in the institutional setting.
   a. Follow an established procedure for purchasing pharmaceuticals, devices, and supplies.
   b. Follow established policies and procedures for receiving goods and verifying specifications on the original order.
   c. Follow established policies and procedures for placing pharmaceuticals, durable medical equipment, devices, and supplies in inventory under proper storage conditions.
   d. Follow established policies and procedures for removing from inventory expired or discontinued pharmaceuticals, durable medical equipment, devices, supplies, or recalled items in these same categories.
   e. Follow established policies and procedures for documenting the removal from inventory of expired or discontinued pharmaceuticals, durable medical equipment, devices, supplies, or recalled items in these same categories.
   f. Identify pharmaceuticals, durable medical equipment, devices, and supplies to be ordered (e.g., want book).
   g. Explain alternative strategies for securing a pharmacy item that is not available.
   h. Explain acceptable methods for communicating changes in product availability to patients, caregivers, and/or health-care professionals.
   i. Follow established policies and procedures to maintain a record of controlled substances received, stored, and removed from inventory.
   j. Follow established policies and procedures to maintain a record of repackaging, recalls, and returns of pharmaceuticals, durable medical equipment, devices, and supplies.
   k. Follow established policies and procedures for monitoring the practice site and local laws, regulations, and professional standards.

9. Maintain pharmacy equipment and facilities in the community or institutional setting.
   a. Follow policies and procedures for sanitation management, hazardous waste handling (needles, etc.), and infection control (protective clothing, etc.).
   b. Maintain a clean and neat work environment.
   c. Given a weighing or counting device, accurately calibrate the device.

10. Discuss the role of the pharmacist in preparing, storing, and distributing investigational drug products in the institutional setting.
    a. Explain the established protocol for recording the preparation of investigational drug products.
    b. Explain the established protocol for storage of investigational drug products.
    c. Explain the established protocol to record the distribution of investigational drug products.

STANDARDS

Standards based on the American Society of Health-System Pharmacists (ASHP)

PHM1   Assist the pharmacist in collecting, organizing, and evaluating information for direct patient care, medication use review, and departmental management.

Postsecondary Pharmacy Technology

PHM2   Receive and screen prescription or medication orders for completeness and authenticity.
PHM3   Prepare medications for distribution.
PHM4   Verify the measurements, preparation, and/or packaging of medications produced by other technicians.
PHM5   Distribute medications.
PHM7   Assist the pharmacist in the identification of patients who desire or require counseling to optimize the use of medications, equipment, and devices.
PHM8   Initiate, verify, assist in the adjudication of, and collect payment and/or initiate billing for pharmacy services and goods.
PHM13   Assist the pharmacist in preparing, storing, and distributing investigational medication products.
PHM14   Assist the pharmacist in the monitoring of medication therapy.
PHM15   Participate in the pharmacy department's process for preventing medication misadventures.
PHM16   Take personal responsibility for assisting the pharmacist in improving direct patient care.
PHM18   Maintain an image appropriate for the profession of pharmacy.
PHM28   Display a caring attitude toward patients in all aspects of job responsibilities.
PHM30   Understand direct patient care delivery systems in multiple practice settings.
PHM31   Efficiently manage one's work whether performed alone or as part of a team.
PHM32   Function effectively as a member of the health-care team.
PHM35   Assist the pharmacist in assuring the quality of all pharmaceutical services.

Related Academic Standards

R3   Recall Information (details, sequence)
R4   Construct Meaning (main idea, summary and paraphrase, compare and contrast, cause and effect)
M1   Addition of Whole Numbers (no regrouping, regrouping)
M2   Subtraction of Whole Numbers (no regrouping, regrouping)
M3   Multiplication of Whole Numbers (no regrouping, regrouping)
M4   Division of Whole Numbers (no remainder, remainder)
M5   Decimals (addition, subtraction, multiplication, division)
M6   Fractions (addition, subtraction, multiplication, division)
M7   Integers (addition, subtraction, multiplication, division)
M8   Percents
M9   Algebraic Operations
A1   Numeration (ordering, place value, scientific notation)
A2   Number Theory (ratio, proportion)
A3   Data Interpretation (graph, table, chart, diagram)
A4   Pre-Algebra and Algebra (equations, inequality)
A5   Measurement (money, time, temperature, length, area, volume)
A7   Computation in Context (whole numbers, decimals, fractions, algebraic operations)
A8   Estimation (rounding, estimation)
L1   Usage (pronoun, tense, subject-verb agreement, adjective, adverb)

Postsecondary Pharmacy Technology

L2   Sentence Formation (fragments, run-on, clarity)
S3   Structural Unit (root, suffix)

21st Century Skills

CS1   Global Awareness
CS2   Financial, Economic, and Business Literacy
CS3   Civic Literacy
CS4   Information and Communication Skills
CS5   Thinking and Problem-Solving Skills
CS6   Interpersonal and Self-Directional Skills

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American Pharmacists Association. (n.d.). Retrieved September 25, 2007, from
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Course Name: Practicum II

Course Abbreviation: PHM 2624

Classification: Vocational-Technical Core

Description: Progression of internship rotations in community hospitals, medical centers, or pharmaceutical manufacturers. The student will be placed in the setting not used in Practicum I. Emphasis is placed on intravenous admixture preparations, total parenteral nutrition, chemotherapy preparations, and the use of controlled and investigational drugs in an institution. (4 sch: 12-hr clinical)

Prerequisite: First three semesters of Pharmacy Technology courses

Competencies and Suggested Objectives

1. Continue to maintain appropriate dress and behavior standards in the community or institutional setting.
    a. Act ethically in the conduct of all pharmacy practice activities.
    b. Dress in attire that follows the site's dress code.
    c. Maintain personal hygiene.
    d. Consistently maintain personal self-control and decorum.

2. Use appropriate and more complex communication to collect pertinent information for use by the pharmacist in the community or institutional setting.
    a. When presented with a specific patient case, collect pertinent patient information for use by the pharmacist from the medical chart, patient profile, or medical record with efficiency and accuracy.
    b. Interview patients, their representatives, or their caregivers to collect pertinent patient information for use by the pharmacist.
    c. Query other health-care professionals to collect pertinent patient information for use by the pharmacist.
    d. Use effective communication skills to elicit from the patient or caregiver the desire for the pharmacist to provide counseling on the use of medications.
    e. Follow protocol to assemble appropriate patient information materials.

3. Continue to address all communication at an appropriate level in the community or institutional setting.
    a. Use listening skills consistently in the performance of job functions.
    b. Use effective strategies for communicating with patients who are non-English speakers or who are impaired (e.g., blind, deaf, cognitively impaired, illiterate).
    c. Combine compassion with the delivery of pharmacy services.
    d. Address all communications with a patient or his or her caregiver in a respectful manner.
    e. Observe legal and ethical guidelines for safeguarding the confidentiality of patient information.

4. Continue to receive and screen prescription or medication orders for completeness in the community or institutional setting.   a. Use first person and electronic systems to receive prescription or medication orders.

	b. When presented with a prescription or medication order, accurately and efficiently assess for completeness. c. Efficiently secure information to complete a prescription or medication order.
5.	Continue to prepare medications for distribution in the community or institutional setting. a. Accurately create a new patient profile, or enter data into an existing profile according to an established manual procedure or electronic procedure. b. Follow established laws and protocols to select the appropriate product. c. Use knowledge of a site's storage system to efficiently secure the prescribed medications or devices from inventory. d. Accurately count or measure finished dosage as specified by the prescription or medication order. e. Assemble the correct ingredients for sterile products that require compounding. f. Determine the correct amounts of ingredients for a compounded product. g. Compound sterile products using appropriate techniques, equipment, and devices. h. Compound nonsterile products using appropriate techniques, equipment, and devices. i. Compound cytotoxic and other hazardous drug products using appropriate techniques. j. Follow safety policies and procedures in the preparation of all medications. k. Follow safety policies and procedures in the disposal of all hazardous and nonhazardous wastes generated during medication preparation. l. Package the product in the appropriate type and size of container using a manual process or automated system. m. Follow an established manual procedure or electronic procedure to generate accurate and complete product labels. n. Affix the appropriate primary and auxiliary labels to containers. o. Follow protocol to assemble appropriate patient information materials. p. Follow established policies and procedures for recording the preparation of bulk, unit dose, and special doses of medications prepared for immediate use or in anticipation of future use. q. Follow established policies and procedures for recording the preparation of controlled substances. r. Follow the manufacturer's recommendation and/or the pharmacy's guidelines for storage of all medications prior to distribution.
6.	Continue to distribute medications in the community or institutional setting. a. Deliver the correct medication, equipment, device, or supplies to the correct patient or patient's representative. b. Follow established policies and procedures to record the distribution of prescription medications. c. Follow established policies and procedures to record the distribution of controlled substances.
7.	Collect payment and/or initiate billing for pharmacy services and goods in the community setting. a. Identify the customer's or patient's method of payment for a prescription or medication order and associated services. b. Use electronic systems to verify third-party coverage for a prescription medication order. c. Verify third-party coverage for a prescription or medication order by phone.

> d. Accurately complete third-party claims forms.
> e. Accurately record the receipt of payment for pharmaceutical goods and services.
> f. Accurately determine those items that are taxable.
> g. Use effective interpersonal skills to deal with customers or patients when obtaining payment for pharmacy goods and services.
> h. Determine payment due the health system for medication orders.

8. Control the inventory of medication, equipment, and devices according to an established plan in the institutional setting.
   a. Follow an established procedure for purchasing pharmaceuticals, devices, and supplies.
   b. Follow established policies and procedures for receiving goods and verifying specifications on the original order.
   c. Follow established policies and procedures for placing pharmaceuticals, durable medical equipment, devices, and supplies in inventory under proper storage conditions.
   d. Follow established policies and procedures for removing from inventory expired or discontinued pharmaceuticals, durable medical equipment, devices, supplies, or recalled items in these same categories.
   e. Follow established policies and procedures for documenting the removal from inventory of expired or discontinued pharmaceuticals, durable medical equipment, devices, supplies, or recalled items in these same categories.
   f. Identify pharmaceuticals, durable medical equipment, devices, and supplies to be ordered (e.g., want book).
   g. Explain alternative strategies for securing a pharmacy item that is not available.
   h. Explain acceptable methods for communicating changes in product availability to patients, caregivers, and/or health-care professionals.
   i. Follow established policies and procedures to maintain a record of controlled substances received, stored, and removed from inventory.
   j. Follow established policies and procedures to maintain a record of repackaging, recalls, and returns of pharmaceuticals, durable medical equipment, devices, and supplies.
   k. Follow established policies and procedures for monitoring the practice site and local laws, regulations, and professional standards.

9. Continue to maintain pharmacy equipment and facilities in the community or institutional setting.
   a. Follow policies and procedures for sanitation management, hazardous waste handling (needles, etc.), and infection control (protective clothing, etc.).
   b. Clean laminar flow biological safety cabinets using approved technique.
   c. Maintain a clean and neat work environment.
   d. Given a weighing or counting device, accurately calibrate the device.

10. Discuss the role of the pharmacist in preparing, storing, and distributing investigational drug products in the institutional setting.
    a. Explain the established protocol for recording the preparation of investigational drug products.
    b. Explain the established protocol for storage of investigational drug products.
    c. Explain the established protocol to record the distribution of investigational drug products.

STANDARDS

Standards based on the American Society of Health-System Pharmacists (ASHP)

PHM1   Assist the pharmacist in collecting, organizing, and evaluating information for direct patient care, medication use review, and departmental management.

PHM5   Distribute medications.

PHM7   Assist the pharmacist in the identification of patients who desire or require counseling to optimize the use of medications, equipment, and devices.

PHM8   Initiate, verify, assist in the adjudication of, and collect payment and/or initiate billing for pharmacy services and goods.

PHM13   Assist the pharmacist in preparing, storing, and distributing investigational medication products.

PHM15   Participate in the pharmacy department's process for preventing medication misadventures.

PHM18   Maintain an image appropriate for the profession of pharmacy.

PHM30   Understand direct patient care delivery systems in multiple practice settings.

PHM31   Efficiently manage one's work whether performed alone or as part of a team.

PHM32   Function effectively as a member of the health-care team.

PHM35   Assist the pharmacist in assuring the quality of all pharmaceutical services.

Related Academic Standards

R3   Recall Information (details, sequence)

R4   Construct Meaning (main idea, summary and paraphrase, compare and contrast, cause and effect)

M1   Addition of Whole Numbers (no regrouping, regrouping)

M2   Subtraction of Whole Numbers (no regrouping, regrouping)

M3   Multiplication of Whole Numbers (no regrouping, regrouping)

M4   Division of Whole Numbers (no remainder, remainder)

M5   Decimals (addition, subtraction, multiplication, division)

M6   Fractions (addition, subtraction, multiplication, division)

M7   Integers (addition, subtraction, multiplication, division)

M8   Percents

M9   Algebraic Operations

A1   Numeration (ordering, place value, scientific notation)

A2   Number Theory (ratio, proportion)

A3   Data Interpretation (graph, table, chart, diagram)

A4   Pre-Algebra and Algebra (equations, inequality)

A5   Measurement (money, time, temperature, length, area, volume)

A7   Computation in Context (whole numbers, decimals, fractions, algebraic operations)

A8   Estimation (rounding, estimation)

L1   Usage (pronoun, tense, subject-verb agreement, adjective, adverb)

L2   Sentence Formation (fragments, run-on, clarity)

S3   Structural Unit (root, suffix)

21st Century Skills

CS1   Global Awareness
CS2   Financial, Economic, and Business Literacy
CS3   Civic Literacy
CS4   Information and Communication Skills
CS5   Thinking and Problem-Solving Skills
CS6   Interpersonal and Self-Directional Skills

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Pharmacy Technician Certification Board. (n.d.). Retrieved September 25, 2007, from
http://ptcb.org

Course Name: Practicum III

Course Abbreviation: PHM 2634

Classification: Vocational-Technical Core

Description: Advanced progression of internship rotations in community hospitals, medical centers, or pharmaceutical manufacturers. Emphasis is placed on intravenous admixture preparations, total parenteral nutrition, chemotherapy preparations, and the use of controlled and investigational drugs in an institution. (4 sch: 12-hr clinical)

Prerequisite: First three semesters of Pharmacy Technology courses

Competencies and Suggested Objectives

1. Continue to maintain appropriate dress and behavior standards in the community or institutional setting chosen by the student.
   a. Act ethically in the conduct of all pharmacy practice activities.
   b. Dress in attire that follows the site's dress code.
   c. Maintain personal hygiene.
   d. Consistently maintain personal self-control and decorum.

2. Use appropriate and more highly developed communication to collect pertinent information for use by the pharmacist in the community or institutional setting chosen by the student.
   a. When presented with a specific patient case, collect pertinent patient information for use by the pharmacist from the medical chart, patient profile, or medical record with efficiency and accuracy.
   b. Interview patients, their representatives, or their caregivers to collect pertinent patient information for use by the pharmacist.
   c. Query other health-care professionals to collect pertinent patient information for use by the pharmacist.
   d. Use effective communication skills to elicit from the patient or caregiver the desire for the pharmacist to provide counseling on the use of medications.
   e. Follow protocol to assemble appropriate patient information materials.

3. Continue to address all communication at an appropriate level in the community or institutional setting chosen by the student.
   a. Use listening skills consistently in the performance of job functions.
   b. Use effective strategies for communicating with patients who are non-English speakers or who are impaired (e.g., blind, deaf, cognitively impaired, illiterate).
   c. Combine compassion with the delivery of pharmacy services.
   d. Address all communications with a patient or his or her caregiver in a respectful manner.
   e. Observe legal and ethical guidelines for safeguarding the confidentiality of patient information.

4. Continue to receive and screen prescription or medication order for completeness in the community or institutional setting chosen by the student.   a. Use first person and electronic systems to receive prescription or medication orders.

b. When presented with a prescription or medication order, accurately and efficiently assess for completeness.

c. Efficiently secure information to complete a prescription or medication order.

5. Continue to prepare medications for distribution in the community or institutional setting chosen by the student.

   a. Accurately create a new patient profile, or enter data into an existing profile according to an established manual procedure or electronic procedure.
   b. Follow established laws and protocols to select the appropriate product.
   c. Use knowledge of a site's storage system to efficiently secure the prescribed medications or devices from inventory.
   d. Accurately count or measure finished dosage as specified by the prescription or medication order.
   e. Assemble the correct ingredients for sterile products that require compounding.
   f. Determine the correct amounts of ingredients for a compounded product.
   g. Compound sterile products using appropriate techniques, equipment, and devices.
   h. Compound nonsterile products using appropriate techniques, equipment, and devices.
   i. Compound cytotoxic and other hazardous drug products using appropriate techniques.
   j. Follow safety policies and procedures in the preparation of all medications.
   k. Follow safety policies and procedures in the disposal of all hazardous and nonhazardous wastes generated during medication preparation.
   l. Package the product in the appropriate type and size of container using a manual process or automated system.
   m. Follow an established manual procedure or electronic procedure to generate accurate and complete product labels.
   n. Affix the appropriate primary and auxiliary labels to containers.
   o. Follow protocol to assemble appropriate patient information materials.
   p. Follow established policies and procedures for recording the preparation of bulk, unit dose, and special doses of medications prepared for immediate use or in anticipation of future use.
   q. Follow established policies and procedures for recording the preparation of controlled substances.
   r. Follow the manufacturer's recommendation and/or the pharmacy's guidelines for storage of all medications prior to distribution.

6. Continue to distribute medications in the community or institutional setting chosen by the student.

   a. Deliver the correct medication, equipment, device, or supplies to the correct patient or patient's representative.
   b. Follow established policies and procedures to record the distribution of prescription medications.
   c. Follow established policies and procedures to record the distribution of controlled substances.

7. Continue to control the inventory of medication, equipment, and devices according to an established plan in the institutional setting chosen by the student.

   a. Follow an established procedure for purchasing pharmaceuticals, devices, and supplies.
   b. Follow established policies and procedures for receiving goods and verifying specifications on the original order.

    c.   Follow established policies and procedures for placing pharmaceuticals, durable medical equipment, devices, and supplies in inventory under proper storage conditions.

    d.   Follow established policies and procedures for removing from inventory expired or discontinued pharmaceuticals, durable medical equipment, devices, supplies, or recalled items in these same categories.

    e.   Follow established policies and procedures for documenting the removal from inventory of expired or discontinued pharmaceuticals, durable medical equipment, devices, supplies, or recalled items in these same categories.

    f.   Identify pharmaceuticals, durable medical equipment, devices, and supplies to be ordered (e.g., want book).

    g.   Explain alternative strategies for securing a pharmacy item that is not available.

    h.   Explain acceptable methods for communicating changes in product availability to patients, caregivers, and/or health-care professionals.

    i.   Follow established policies and procedures to maintain a record of controlled substances received, stored, and removed from inventory.

    j.   Follow established policies and procedures to maintain a record of repackaging, recalls, and returns of pharmaceuticals, durable medical equipment, devices, and supplies.

    k.   Follow established policies and procedures for monitoring the practice site and local laws, regulations, and professional standards.

8. Continue to collect payment and/or initiate billing for pharmacy services and goods in the community setting chosen by the student.

    a.   Identify the customer's or patient's method of payment for a prescription or medication order and associated services.

    b.   Use electronic systems to verify third-party coverage for a prescription medication order.

    c.   Verify third-party coverage for a prescription or medication order by phone.

    d.   Accurately complete third-party claims forms.

    e.   Accurately record the receipt of payment for pharmaceutical goods and services.

    f.   Accurately determine those items that are taxable.

    g.   Use effective interpersonal skills to deal with customers or patients when obtaining payment for pharmacy goods and services.

    h.   Determine payment due the health system for medication orders.

9. Continue to maintain pharmacy equipment and facilities in the community or institutional setting chosen by the student.

    a.   Follow policies and procedures for sanitation management, hazardous waste handling (needles, etc.), and infection control (protective clothing, etc.).

    b.   Clean laminar flow biological safety cabinets using approved technique.

    c.   Maintain a clean and neat work environment.

    d.   Given a weighing or counting device, accurately calibrate the device.

10. Discuss more in depth the role of the pharmacist in preparing, storing, and distributing investigational drug products in the institutional setting chosen by the student.

    a.   Explain the established protocol for recording the preparation of investigational drug products.

    b.   Explain the established protocol for storage of investigational drug products.

    c.   Explain the established protocol to record the distribution of investigational drug

products.

STANDARDS

Standards based on the American Society of Health-System Pharmacists (ASHP)

PHM1   Assist the pharmacist in collecting, organizing, and evaluating information for direct patient care, medication use review, and departmental management.

PHM5   Distribute medications.

PHM7   Assist the pharmacist in the identification of patients who desire or require counseling to optimize the use of medications, equipment, and devices.

PHM8   Initiate, verify, assist in the adjudication of, and collect payment and/or initiate billing for pharmacy services and goods.

PHM13   Assist the pharmacist in preparing, storing, and distributing investigational medication products.

PHM15   Participate in the pharmacy department's process for preventing medication misadventures.

PHM18   Maintain an image appropriate for the profession of pharmacy.

PHM30   Understand direct patient care delivery systems in multiple practice settings.

PHM31   Efficiently manage one's work whether performed alone or as part of a team.

PHM32   Function effectively as a member of the health-care team.

PHM35   Assist the pharmacist in assuring the quality of all pharmaceutical services.

Related Academic Standards

R3   Recall Information (details, sequence)

R4   Construct Meaning (main idea, summary and paraphrase, compare and contrast, cause and effect)

M1   Addition of Whole Numbers (no regrouping, regrouping)

M2   Subtraction of Whole Numbers (no regrouping, regrouping)

M3   Multiplication of Whole Numbers (no regrouping, regrouping)

M4   Division of Whole Numbers (no remainder, remainder)

M5   Decimals (addition, subtraction, multiplication, division)

M6   Fractions (addition, subtraction, multiplication, division)

M7   Integers (addition, subtraction, multiplication, division)

M8   Percents

M9   Algebraic Operations

A1   Numeration (ordering, place value, scientific notation)

A2   Number Theory (ratio, proportion)

A3   Data Interpretation (graph, table, chart, diagram)

A4   Pre-Algebra and Algebra (equations, inequality)

A5   Measurement (money, time, temperature, length, area, volume)

A7   Computation in Context (whole numbers, decimals, fractions, algebraic operations)

A8   Estimation (rounding, estimation)

L1   Usage (pronoun, tense, subject-verb agreement, adjective, adverb)

L2   Sentence Formation (fragments, run-on, clarity)

Postsecondary Pharmacy Technology

S3   Structural Unit (root, suffix)

21st Century Skills

CS1   Global Awareness
CS2   Financial, Economic, and Business Literacy
CS3   Civic Literacy
CS4   Information and Communication Skills
CS5   Thinking and Problem-Solving Skills
CS6   Interpersonal and Self-Directional Skills

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        http://ptcb.org

Course Name: Pharmacy Management

Course Abbreviation: PHM 2715

Classification: Vocational-Technical Core

Description: Discussion of pharmacy functions relating to policies and procedures, pharmaceutical purchasing, inventory control, drug recall and returns, and maintaining transaction records. The class will explore several retail functions such as payments, billing, oral and written communications, computer data collection, and pharmaceutical merchandising. (5 sch: 4-hr lecture, 2-hr lab)

Prerequisite: First four semesters of Pharmacy Technology courses

Competencies and Suggested Objectives
1. Communicate clearly orally and in writing with professional staff, manufacturers' representatives, and distributors.
a. Organize all written or verbal communication logically.
b. Address all communication at an appropriate level.
c. Use correct grammar, punctuation, spelling, style, and formatting conventions in the preparation of all written communications.
d. Pronounce technical terms correctly.
e. Use listening skills consistently in the performance of job functions.
2. Use computers to perform pharmacy functions related to inventory control, ordering, and stock status reports.
a. Explain typical database used to support pharmacy management functions.
b. Demonstrate ability to order by bar code scanning.
c. Demonstrate ability to order by computer modem.
d. Demonstrate ability to transmit orders via fax machines.
3. Purchase pharmaceuticals, devices, and supplies according to an established purchasing program.
a. Describe typical procedures for purchasing pharmaceuticals, devices, and supplies.
b. Describe typical procedures used to expedite emergency orders.
c. Demonstrate the ability to follow established procedures for ordering medications.
4. Identify pharmaceuticals, durable medical equipment, devices, and supplies to be ordered (e.g., want book).
a. Explain the importance of maintaining an adequate supply of pharmaceuticals.
b. Explain the role that judgment plays in supplementing an automated system for determining the timing and amount of pharmaceuticals, durable medical equipment, devices, and supplies to order.
c. Explain alternative strategies for securing a pharmacy item that is not available.
d. State categories of alternative sources of items not available from the primary vendor at times of need.
e. Explain the importance of evaluating the costs of securing a needed item from an alternative source.
f. Explain acceptable methods for communicating changes in product availability to

patients, caregivers, and/or health-care professionals.

5. Control the inventory of medications, equipment, and devices according to an established plan.
    a. Describe the various methods of inventory control (e.g., prime vendor, just-in-time).
    b. Follow established policies and procedures for receiving goods and verifying specifications on the original order.
    c. Describe the general tasks involved in receiving and verifying the order of goods.
    d. Describe methods for handling back-ordered medications.

6. Follow established policies and procedures to maintain a record of controlled substances received, stored, and removed from inventory.
    a. State the legal requirements for recording controlled substances received.
    b. State the procedure for destroying controlled substances.
    c. Demonstrate the ability to maintain a controlled substance inventory.

7. Follow established policies and procedures for removing from inventory expired or discontinued pharmaceuticals, durable medical equipment, devices, supplies, or recalled items in these same categories.
    a. Define the terms expired, discontinued, and recalled as used in pharmacy.
    b. Describe common reasons for discontinuing or recalling items.
    c. Explain the role of documenting item removal in maintaining an inventory system.
    d. Explain the importance of maintaining a record of repackaging, recalls, and returns of pharmaceuticals, durable medical equipment, devices, and supplies.
    e. Demonstrate the ability to follow established procedures for removing items from inventory.

8. Demonstrate the ability to manage an institutional formulary.
    a. Explain federal and state laws governing the substitution of drug products.
    b. Explain the purpose and use of a formulary (e.g., state, health system, buying group).
    c. Explain the influence that the formulary and/or policies of third-party payers have on the selection of products.
    d. Explain the procedure for addition or removal of a drug from a formulary.
    e. Follow an established program to efficiently and accurately collect data for use by the pharmacist in managing pharmacy services.
    f. State the types of information the pharmacist might request to assist in managing pharmacy services.

9. Use effective communication skills to elicit from the patient or caregiver the desire for the pharmacist to provide counseling on the use of medications.
    a. Organize written or verbal communications to explain the importance of counseling patients in the use of medications.
    b. Address all communication at an appropriate level.
    c. Use listening skills consistently in the performance of job functions.
    d. Describe the legal obligations for patient counseling, including documentation, as specified in OBRA '90.
    e. Explain effective questioning strategies for determining the desire for the pharmacist to provide counseling.

10. Recognize the need to adapt the delivery of pharmacy services for the culturally diverse, and those with special needs.
    a. Demonstrate ability to use American Sign Language to communicate with the hearing

impaired.
b. Accommodate patients of diverse cultural backgrounds.
11. Describe and discuss business aspects of intuitional or community pharmacy operations.
a. Understand efficient pharmacy work flow as demonstrated through the use of a plan-o-gram.
b. Discuss basic business practices such as the financial aspect, personnel management, and conflict negotiations or resolutions.

STANDARDS

Standards based on the American Society of Health-System Pharmacists (ASHP)

PHM1   Assist the pharmacist in collecting, organizing, and evaluating information for direct patient care, medication use review, and departmental management.

PHM8   Initiate, verify, assist in the adjudication of, and collect payment and/or initiate billing for pharmacy services and goods.

PHM9   Purchase pharmaceuticals, devices, and supplies according to an established purchasing program.

PHM10   Control the inventory of medications, equipment, and devices according to an established plan.

PHM11   Assist the pharmacist in monitoring the practice site and/or service area for compliance with federal, state, and local laws; regulations; and professional standards.

PHM12   Maintain pharmacy equipment and facilities.

PHM13   Assist the pharmacist in preparing, storing, and distributing investigational medication products.

PHM15   Participate in the pharmacy department's process for preventing medication misadventures.

PHM16   Take personal responsibility for assisting the pharmacist in improving direct patient care.

PHM17   Demonstrate ethical conduct in all job-related activities.

PHM19   Resolve conflicts through negotiation.

PHM20   Understand the principles for managing change.

PHM21   Appreciate the need to adapt direct patient care to meet the needs of diversity.

PHM24   Understand the importance of and resources for staying current with changes in pharmacy practice.

PHM26   Maximize work efficiency through the use of technology.

PHM27   Efficiently solve problems commonly encountered in one's own work.

PHM28   Display a caring attitude toward patients in all aspects of job responsibilities.

PHM29   Maintain confidentiality of patient and proprietary business information.

PHM30   Understand direct patient care delivery systems in multiple practice settings.

PHM31   Efficiently manage one's work whether performed alone or as part of a team.

PHM33   Balance obligations to one's self, relationships, and work in a way that minimizes stress.

Related Academic Standards

R1   Interpret Graphic Information (forms, maps, reference sources)
R2   Words in Context (same and opposite meaning)
R3   Recall Information (details, sequence)
R4   Construct Meaning (main idea, summary and paraphrase, compare and contrast, cause and effect)
R5   Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
M1   Addition of Whole Numbers (no regrouping, regrouping)
M2   Subtraction of Whole Numbers (no regrouping, regrouping)
M3   Multiplication of Whole Numbers (no regrouping, regrouping)
M4   Division of Whole Numbers (no remainder, remainder)
M5   Decimals (addition, subtraction, multiplication, division)
M6   Fractions (addition, subtraction, multiplication, division)
M7   Integers (addition, subtraction, multiplication, division)
M8   Percents
M9   Algebraic Operations
A1   Numeration (ordering, place value, scientific notation)
A2   Number Theory (ratio, proportion)
A3   Data Interpretation (graph, table, chart, diagram)
A4   Pre-Algebra and Algebra (equations, inequality)
A5   Measurement (money, time, temperature, length, area, volume)
A7   Computation in Context (whole numbers, decimals, fractions, algebraic operations)
A8   Estimation (rounding, estimation)

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21st Century Skills

CS1   Global Awareness
CS2   Financial, Economic, and Business Literacy
CS4   Information and Communication Skills
CS5   Thinking and Problem-Solving Skills
CS6   Interpersonal and Self-Directional Skills

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http://ptcb.org

Course Name: Pharmacy Transition

Course Abbreviation: PHM 2813

Classification: Vocational-Technical Core

Description: Further develops decision-making skills and promotes an interest in continued professional development. Employment opportunities and responsibilities, as well as preparation for the Pharmacy Technician Certification Exam, are emphasized. (3 sch: 3-hr lecture)

Prerequisite: First four semesters of Pharmacy Technology courses

Competencies and Suggested Objectives

1. Prepare for the National Certification Exam.
    a. Review specific content areas for the National Certification Exam.
    b. Take a mock certification exam for practice.

2. Discuss the importance of change.
    a. Explain why dealing with change is an important skill for a pharmacy technician.
    b. Explain the principles for the management of change.

3. Maintain personal self-control and decorum.
    a. Explain typical situations that arise in the work of the pharmacy technician that may challenge self-control.
    b. Explain techniques the technician can use to exercise self-control in challenging situations.
    c. Follow established policies and procedures to deter theft and/or drug diversion.

4. Use knowledge of interpersonal skills to effectively manage working relationships.
    a. Describe the types of interactions with others that occur in the work of the pharmacy technician.
    b. Explain the importance of establishing and maintaining effective interpersonal working relationships with other members of the health-care team.
    c. Explain techniques for building good working relationships with others.

5. Utilize employability skills.
    a. List areas of employment available for the pharmacy technician.
    b. Prepare a resume, letter of application, and letter of resignation.
    c. List do's and don'ts of job interviews.
    d. Demonstrate the role of an applicant in a job interview.

STANDARDS

Standards based on the American Society of Health-System Pharmacists (ASHP)

PHM17 Demonstrate ethical conduct in all job-related activities.
PHM18 Maintain an image appropriate for the profession of pharmacy.
PHM19 Resolve conflicts through negotiation.
PHM20 Understand the principles for managing change.
PHM21 Appreciate the need to adapt direct patient care to meet the needs of diversity.

Postsecondary Pharmacy Technology

PHM22   Appreciate the benefits of active involvement in local, state, and national technician and other pharmacy organizations.
PHM23   Appreciate the value of obtaining technician certification.
PHM24   Understand the importance of and resources for staying current with changes in pharmacy practice.
PHM25   Communicate clearly when speaking or writing.
PHM26   Maximize work efficiency through the use of technology.
PHM27   Efficiently solve problems commonly encountered in one's own work.
PHM28   Display a caring attitude toward patients in all aspects of job responsibilities.
PHM29   Maintain confidentiality of patient and proprietary business information.
PHM31   Efficiently manage one's work whether performed alone or as part of a team.
PHM32   Function effectively as a member of the health-care team.
PHM33   Balance obligations to one's self, relationships, and work in a way that minimizes stress.

Related Academic Standards

R1   Interpret Graphic Information (forms, maps, reference sources)
R2   Words in Context (same and opposite meaning)
R3   Recall Information (details, sequence)
R4   Construct Meaning (main idea, summary and paraphrase, compare and contrast, cause and effect)
R5   Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
M1   Addition of Whole Numbers (no regrouping, regrouping)
M2   Subtraction of Whole Numbers (no regrouping, regrouping)
M3   Multiplication of Whole Numbers (no regrouping, regrouping)
M4   Division of Whole Numbers (no remainder, remainder)
M5   Decimals (addition, subtraction, multiplication, division)
M6   Fractions (addition, subtraction, multiplication, division)
M7   Integers (addition, subtraction, multiplication, division)
M8   Percents
M9   Algebraic Operations
A1   Numeration (ordering, place value, scientific notation)
A2   Number Theory (ratio, proportion)
A3   Data Interpretation (graph, table, chart, diagram)
A4   Pre-Algebra and Algebra (equations, inequality)
A5   Measurement (money, time, temperature, length, area, volume)
A7   Computation in Context (whole numbers, decimals, fractions, algebraic operations)
A8   Estimation (rounding, estimation)
L1   Usage (pronoun, tense, subject-verb agreement, adjective, adverb)
L2   Sentence Formation (fragments, run-on, clarity)
L3   Paragraph Development (topic sentence, supporting sentence, sequence)
L4   Capitalization (proper noun, titles)
L5   Punctuation (comma, semicolon)
L6   Writing Conventions (quotation marks, apostrophe, parts of a letter)
S1   Vowel (short, long)

Postsecondary Pharmacy Technology

S2   Consonant (variant spelling, silent letter)
S3   Structural Unit (root, suffix)

21st Century Skills

CS1   Global Awareness
CS2   Financial, Economic, and Business Literacy
CS4   Information and Communication Skills
CS5   Thinking and Problem-Solving Skills
CS6   Interpersonal and Self-Directional Skills

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        NJ: Pearson Prentice Hall.

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Recommended Tools and Equipment

CAPITALIZED ITEMS

1. Class A prescription balances (1 per 2 students)
2. Laminar air flow hood - horizontal or vertical (1 per program)
3. Pharmacy shelving
4. Unit dose rack (holds minimum of 100) (1 per program)
5. Patient unit dose drawers (12 per program)
6. Repackaging/unit dose machine (1 per program)
7. Analytical scales (1 per program)
8. Syringe pump (1 per program)
9. Micromedix with updates (1 per program)
10. Hospital Pharmacy software (1 per computer)
11. Outpatient Pharmacy software (1 per computer)
12. Automix Compounder and software
13. Clinical Pharmacology software (1 per computer)

NON-CAPITALIZED ITEMS

1. Mortar and pestle, 8 oz (12 per program)
2. Beakers, 50ml, 100ml, 250ml, 500ml (12 each size per program)
3. Beakers, 1000ml, 3000ml (4 each size per program)
4. Graduated cylinders, 10ml, 25ml, 50ml, 100ml (12 each size per program)
5. Ointment slabs (12 per program)
6. Pill tiles (12 per program)
7. Metric, household, and apothecary Weights (1 set per 2 students)
8. Spatulas, rubber (12 per program)
9. Spatulas, metal (12 per program)
10. Counting trays (12 per program)
11. Emergency eye wash station (1 per program)
12. Auxiliary label holder (1 per program)
13. Sphygmomanometers (6 per program)
14. Stethoscopes (6 per program)
15. Crutches (1 pair per program)
16. Walker (1 per program)
17. TED Hose
18. Ostomy supplies (1 set per program)
19. Patient medication charts (12 per program)
20. Hot plate (1 per 4 students)
21. Nebulizer (1 per program)
22. Chemical spill kit (2 per program)
23. Suppository molds: metal, plastic, and rubber (2 sets each per program)
24. First aid kit (1 per program)
25. Remmington's Pharmaceutical Science (1 per 2 students)
26. Physician's Desk Reference (4 per program)

27. Facts and Comparisons (1 per 4 students)
28. APHA Drug Information (current edition) (4 per program)
29. King's Parenteral Admixture Manual (1 set per program)
30. Trissel's Handbook of Injectable Drugs (1 per 4 students)
31. USP/NF Book (2 per program)
32. ASHP Guidelines for Compounding Sterile Products Video (1 per program)
33. ASHP Guidelines for Hazardous Materials Video (1 per program)

RECOMMENDED INSTRUCTIONAL AIDS

It is recommended that instructors have access to the following items:

1. TV, 31" (2 per program)
2. VCR/DVD player (2 per program)
3. Printer, laser (1 networked)
4. Typewriters (2 per program)
5. Word Processing software (1 per computer)
6. LCD panel or interactive whiteboard (1 per program)
7. Computer (1 per student)
8. Video (blood-borne pathogens)

Assessment

Students will be assessed using the *Pharmacy Technician Certification Board (PTCB) Pharmacy Technician Certification Exam.*

Appendix A: Standards based on the American Society of Health-System Pharmacists (ASHP), Model Curriculum for Pharmacy Technician Training (Second edition), Goal Statements[1]

PHM1   Assist the pharmacist in collecting, organizing, and evaluating information for direct patient care, medication use review, and departmental management.

PHM2   Receive and screen prescription or medication orders for completeness and authenticity.

PHM3   Prepare medications for distribution.

PHM4   Verify the measurements, preparation, and/or packaging of medications produced by other technicians.

PHM5   Distribute medications.

PHM6   Assist the pharmacist in the administration of immunizations.

PHM7   Assist the pharmacist in the identification of patients who desire or require counseling to optimize the use of medications, equipment, and devices.

PHM8   Initiate, verify, assist in the adjudication of, and collect payment and/or initiate billing for pharmacy services and goods.

PHM9   Purchase pharmaceuticals, devices, and supplies according to an established purchasing program.

PHM10   Control the inventory of medications, equipment, and devices according to an established plan.

PHM11   Assist the pharmacist in monitoring the practice site and/or service area for compliance with federal, state, and local laws; regulations; and professional standards.

PHM12   Maintain pharmacy equipment and facilities.

PHM13   Assist the pharmacist in preparing, storing, and distributing investigational medication products.

PHM14   Assist the pharmacist in the monitoring of medication therapy.

PHM15   Participate in the pharmacy department's process for preventing medication misadventures.

PHM16   Take personal responsibility for assisting the pharmacist in improving direct patient care.

PHM17   Demonstrate ethical conduct in all job-related activities.

PHM18   Maintain an image appropriate for the profession of pharmacy.

PHM19   Resolve conflicts through negotiation.

PHM20   Understand the principles for managing change.

PHM21   Appreciate the need to adapt direct patient care to meet the needs of diversity.

PHM22   Appreciate the benefits of active involvement in local, state, and national technician and other pharmacy organizations.

PHM23   Appreciate the value of obtaining technician certification.

PHM24   Understand the importance of and resources for staying current with changes in pharmacy practice.

PHM25   Communicate clearly when speaking or writing.

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[1] American Society of Health-System Pharmacists (ASHP). (n.d.). *Model curriculum for pharmacy technician training* (2nd ed.). Bethesda, MD: Author.

PHM26   Maximize work efficiency through the use of technology.
PHM27   Efficiently solve problems commonly encountered in one's own work.
PHM28   Display a caring attitude toward patients in all aspects of job responsibilities.
PHM29   Maintain confidentiality of patient and proprietary business information.
PHM30   Understand direct patient care delivery systems in multiple practice settings.
PHM31   Efficiently manage one's work whether performed alone or as part of a team.
PHM32   Function effectively as a member of the health-care team.
PHM33   Balance obligations to one's self, relationships, and work in a way that minimizes stress.
PHM34   Understand the use and side effects of prescription and nonprescription medications used to treat common disease states.
PHM35   Assist the pharmacist in assuring the quality of all pharmaceutical services.

Appendix B: Related Academic Standards[2]

Reading
R1   Interpret Graphic Information (forms, maps, reference sources)
R2   Words in Context (same and opposite meaning)
R3   Recall Information (details, sequence)
R4   Construct Meaning (main idea, summary and paraphrase, compare and contrast, cause and effect)
R5   Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)

Mathematics Computation
M1   Addition of Whole Numbers (no regrouping, regrouping)
M2   Subtraction of Whole Numbers (no regrouping, regrouping)
M3   Multiplication of Whole Numbers (no regrouping, regrouping)
M4   Division of Whole Numbers (no remainder, remainder)
M5   Decimals (addition, subtraction, multiplication, division)
M6   Fractions (addition, subtraction, multiplication, division)
M7   Integers (addition, subtraction, multiplication, division)
M8   Percents
M9   Algebraic Operations

Applied Mathematics
A1   Numeration (ordering, place value, scientific notation)
A2   Number Theory (ratio, proportion)
A3   Data Interpretation (graph, table, chart, diagram)
A4   Pre-Algebra and Algebra (equations, inequality)
A5   Measurement (money, time, temperature, length, area, volume)
A6   Geometry (angles, Pythagorean theory)
A7   Computation in Context (whole numbers, decimals, fractions, algebraic operations)
A8   Estimation (rounding, estimation)

Language
L1   Usage (pronoun, tense, subject-verb agreement, adjective, adverb)
L2   Sentence Formation (fragments, run-on, clarity)
L3   Paragraph Development (topic sentence, supporting sentence, sequence)
L4   Capitalization (proper noun, titles)
L5   Punctuation (comma, semicolon)
L6   Writing Conventions (quotation marks, apostrophe, parts of a letter)

Spelling
S1   Vowel (short, long)
S2   Consonant (variant spelling, silent letter)

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[2] CTB/McGraw-Hill LLC. (1994). *Tests of adult basic education, Forms 7 and 8.* Monterey, CA: Author. Reproduced with permission of CTB/McGraw-Hill LLC. TABE is a registered trademark of The McGraw-Hill Companies, Inc. Copyright © 1994 by CTB/McGraw-Hill LLC. Reproduction of this material is permitted for educational purposes only.

S3   Structural Unit (root, suffix)

Appendix C: 21st Century Skills[3]

CS1   Global Awareness
- Using 21st century skills to understand and address global issues
- Learning from and working collaboratively with individuals representing diverse cultures, religions, and lifestyles in a spirit of mutual respect and open dialogue in personal, work, and community contexts
- Promoting the study of non-English language as a tool for understanding other nations and cultures

CS2   Financial, Economic, and Business Literacy
- Knowing how to make appropriate personal economic choices
- Understanding the role of the economy and the role of business in the economy
- Applying appropriate 21st century skills to function as a productive contributor within an organizational setting
- Integrating oneself within and adapting continually to our nation's evolving economic and business environment

CS3   Civic Literacy
- Being an informed citizen to participate effectively in government
- Exercising the rights and obligations of citizenship at local, state, national, and global levels
- Understanding the local and global implications of civic decisions
- Applying 21st century skills to make intelligent choices as a citizen

CS4   Information and Communication Skills
- Information and media literacy skills: Analyzing, accessing, managing, integrating, evaluating, and creating information in a variety of forms and media; understanding the role of media in society
- Communication skills: Understanding, managing, and creating effective oral, written, and multimedia communication in a variety of forms and contexts

CS5   Thinking and Problem-Solving Skills
- Critical thinking and systems thinking: Exercising sound reasoning in understanding and making complex choices, understanding the interconnections among systems
- Problem identification, formulation, and solution: Ability to frame, analyze, and solve problems
- Creativity and intellectual curiosity: Developing, implementing, and communicating new ideas to others, staying open and responsive to new and diverse perspectives

CS6   Interpersonal and Self-Directional Skills
- Interpersonal and collaborative skills: Demonstrating teamwork and leadership, adapting to varied roles and responsibilities, working productively with others, exercising empathy, respecting diverse perspectives
- Self-direction: Monitoring one's own understanding and learning needs, locating appropriate resources, transferring learning from one domain to another
- Accountability and adaptability: Exercising personal responsibility and flexibility in personal, workplace, and community contexts; setting and meeting high standards and goals for one's self and others; tolerating ambiguity

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[3] *21st century skills.* (n.d.). Washington, DC: Partnership for 21st Century Skills.

- Social responsibility: Acting responsibly with the interests of the larger community in mind; demonstrating ethical behavior in personal, workplace, and community contexts