

HEALTH SCIENCE EDUCATION II: PHARMACY

Health Science Education II: Pharmacy is an extended laboratory experience that includes extensive instruction in pharmacology, state pharmacy law, mathematical skills, and basic technical skills. This may include an extended laboratory experience at an approved clinical site of the student's choice; usually pharmacies found in grocery and drug stores or hospitals, designed to provide students the opportunity to assume the role of a pharmacy technician and practice technical skills previously learned in the classroom, including information on the health care system and employment opportunities at a variety of entry levels, an overview of the health care delivery systems, health care teams and legal and ethical considerations. It prepares students with the knowledge, skills and attitudes essential for providing basic care in extended care facilities, hospitals and home health agencies under the direction of licensed pharmacists. Students will also gain skills to record patient information, count tablets and measure medications, mix medications or ointments, package and label prescriptions, accept payment and process insurance claims, and do routine pharmacy tasks such as organizing medications, taking phone calls, cleaning, and customer service. This course also provides students with the knowledge, attitudes, and skills needed to make the transition from school to work in health science careers, including self-analysis to aid in career selection, job seeking and job maintenance skills, personal management skills, and to complete the application process for admission into a post-secondary program. Membership and participation in HOSA, the health science student organization, is encouraged as it develops leadership, communication, community service and health care related skills

- DOE Code: 5214
- Recommended Grade Level: Grade 12
- Recommended Prerequisites: Health Science Education I
- Credits: 3 credits per semester, maximum of 6 credits
- Counts as a Directed Elective or Elective for the General, Core 40, Core 40 with Academic Honors and Core 40 with Technical Honors diplomas

Application of Content

Intensive laboratory applications are a component of this course and may be either school based or work based or a combination of the two. Work-based learning experiences should be in a closely related industry setting. Instructors shall have a standards-based training plan for students participating in work-based learning experiences

Career and Technical Student Organizations (CTSOs)

Career and Technical Student Organizations are considered a powerful instructional tool when integrated into Career and Technical Education programs. They enhance the knowledge and skills students learn in a course by allowing a student to participate in a unique program of career and leadership development. Students should be encouraged to participate in FCCLA and/or FFA, the CTSOs for the most closely related subject matter areas.

Content Standards

Domain I. Assisting the Pharmacist in Serving Patients

Core Standard 1

Student must possess knowledge of state-specific prescription regulations as well as the site policies and procedures regarding prescriptions or medication orders, information obtained from patient representative, required refill information, etc.

Standards

- PT-1.1 Receive or accept prescription/medication order(s) from patient/patient's representative, prescriber, or other healthcare professional
- PT-1.2 Accept new prescription/medication order electronically (for example, by telephone, fax, or electronic transmission)
- PT-1.3 Accept refill request from patient/patient's representative

PT-1.4 Accept refill authorization from prescriber or other healthcare professional electronically (for example, by telephone, fax, or electronic transmission)

PT-1.5 Contact prescriber/originator for clarification of prescription/medication order refill and student should be familiar with prescription transfer requirements, but Indiana state law prohibits this function

Core Standard 2

Student must have knowledge of federal, state, and/or practice site regulations, codes of ethics, and standards pertaining to the practice of pharmacy.

Standards

PT-2.1 Assist the pharmacist in accordance with federal rules and regulations in obtaining from the patient/patient's representative such information as diagnosis or desired therapeutic outcome, disease state, medication history (including over-the-counter [OTC] medications and dietary supplements), allergies, adverse reactions, medical history and other relevant patient information, physical disability, and payer information (including both self-pay and third party reimbursement)

PT-2.2 Assist the pharmacist in accordance with federal rules and regulations in obtaining from prescriber, other healthcare professionals, and/or the medical record such information as diagnosis or desired therapeutic outcome, disease state, medication history (including over-the-counter [OTC] medications and dietary supplements), allergies, adverse reactions, medical history and other relevant patient information, physical disability, and payer information (including both self-pay and third-party reimbursement)

Core Standard 3

Student must be able to collect and communicate data clearly

Standards

PT-3.1 Collect and communicate patient-specific data (for example, blood pressure, glucose, cholesterol levels, therapeutic drug levels, immunizations) to assist the pharmacist in monitoring patient outcomes

PT-3.2 Collect and communicate data related to restricted drug distribution programs (for example, thalidomide, isotretinoin, clozapine)

PT-3.3 Collect and communicate data related to investigational drugs

Core Standard 4

Student must be detail oriented and understand the importance of updating and maintain patient records

Standards

PT-4.1 Assess prescription or medication order for completeness (for example, patient's name and address), accuracy, authenticity, legality, and reimbursement eligibility

PT-4.2 Update the medical record/patient profile with such information as medication history (including [OTC] medications and dietary supplements), disease states, compliance/adherence patterns, allergies, medication duplication, and/or drug-disease, drug-drug, drug-laboratory, drug-dietary supplement and/or OTC, and drug-food interactions

Core Standard 5

Student must be able to process a prescription/medication order

Standards

PT-5.1 Enter prescription/medication order information into patient profile and select the appropriate product(s) for dispensing (for example, brand names, generic substitutes, therapeutic substitutes, formulary restrictions)

PT-5.2 Calculate quantity and days supply of finished dosage forms for dispensing and measure or count quantity of finished dosage forms for dispensing

PT-5.3 Introduce radiopharmaceuticals/ chemotherapeutic/investigational products and perform calculations for usage

PT-5.4 Package finished dosage forms (for example, blister pack, robotic/automated dispensing, vial), affix label(s) and auxiliary label(s) to container(s), and assemble patient information materials (for example, drug information sheets, patient package inserts, Health Information Portability and Accountability Act [HIPAA] literature)

PT-5.5 Check for accuracy during processing of the prescription/medication order (for example, National Drug Code [NDC] number, bar code, and data entry) and verify the data entry, measurements, preparation, and/or packaging of medications produced by other technicians as allowed by law (for example, tech check tech)

PT-5.6 Prepare prescription or medication order for final check by pharmacist or by pharmacy technician as allowed by law (for example, tech check tech)

PT-5.7 Introduce Nuclear Regulatory Commission (NRC) required checks for radiopharmaceuticals

PT-5.8 Compound a prescription/medication order: Assemble equipment and/or supplies necessary for compounding the prescription/medication order, Calibrate equipment (for example, scale or balance, total parenteral nutrition [TPN] compounder) needed to compound the prescription/medication order, Perform calculations required for preparation of compounded IV admixtures, Perform calculations for extemporaneous compounds, Compound medications (for example, topical preparations, reconstituted antibiotic suspensions) for dispensing according to prescription and/or compounding guidelines, Compound medications in anticipation of prescriptions/medication orders (for example, compounding for a specific patient)

PT-5.9 Student should be familiar with the process of sterile product preparation (for example, TPNs, piggybacks, IV solutions, ophthalmic products) and should have experiences with the simulation of such products

PT-5.10 Record preparation and/or ingredients of medications (for example, lot number, control number, expiration date, chemotherapy calculations, type of IV solution)

Core Standard 6

Provide prescription/medication to patient/patient's representative:

Standards

PT-6.1 Provide medication and supplemental information (for example, patient package inserts) to patient/patient's representative

PT-6.2 Package and ship pharmaceuticals, durable and non-durable medical equipment, devices, and supplies (including hazardous substances and investigational products) to patient/patient's representative and to manufacturer or other location

PT-6.3 Place medication in dispensing system (for example, unit-dose cart, automated systems) and deliver medication to patient-care unit

PT-6.4 Record distribution of prescription medication, controlled substances, investigational drugs, restricted drugs (for example, isotretinoin, clozapine, thalidomide), and prescription/medication to patient's home and to manufacturer or other location

Core Standard 7

Student must be able to obtain payment for goods and services and resolve problems that arise as well as provide patient assistances with payment plans.

Standards

PT-7.1 Determine charges and understand the reimbursement process for products and services

PT-7.2 Communicate with third-party payors to determine or verify coverage, to obtain prior authorizations, and to rectify rejected third-party claims.

PT-7.3 Identify and resolve problems with rejected claims (for example, incorrect days supply, incorrect ID number) and assist the patient/patient's representative in choosing the best payment assistance plan if multiple plans are available to patient

Core Standard 8

Student should be able to provide supplemental information, make referrals, and dispense drugs.

Standards

PT-8.1 Provide supplemental information (for example, disease state information, CDs) as requested/required Direct patient/patient's representative to pharmacist for counseling

PT-8.2 Perform drug administration functions under appropriate supervision (for example, perform drug/IV rounds, check pumps, anticipate refill of drugs/IVs)

PT-8.3 Understand and practice processing simulated enteral products

Domain II. Maintaining Medication and Inventory Control Systems

Core Standard 9

Student can identify and place the appropriate order, emergency and otherwise, for pharmaceuticals and medical equipment.

Standards

PT-9.1 Identify pharmaceuticals, durable and non-durable medical equipment, devices, and supplies (including hazardous substances and investigational products) to be ordered

PT-9.2 Place routine orders for pharmaceuticals, durable and nondurable medical equipment, devices, and supplies (including hazardous substances and investigational products) in compliance with legal, regulatory, formulary, budgetary, and contractual requirements and emergency orders for pharmaceuticals, durable and non-durable medical equipment, devices, and supplies (including hazardous substances and investigational products) in compliance with legal, regulatory, formulary, budgetary, and contractual requirements

Core Standard 10

Student can receive stock, maintain and inventory the appropriate pharmaceuticals, medical equipment, and supplies and use proper techniques for disposal of expired or discontinued stock.

Standards

PT-10.1 Receive pharmaceuticals, durable and non-durable medical equipment, devices, and supplies (including hazardous substances and investigational products) and verify against specifications on original purchase orders and place pharmaceuticals in inventory under proper storage conditions while incorporating error prevention strategies.

PT-10.2 Perform non-patient-specific preparation, distribution, and maintenance of pharmaceuticals, durable and non-durable medical equipment, devices, and supplies (including hazardous substances and investigational products) while incorporating error prevention strategies (for example, crash carts, clinic and nursing floor stock, automated dispensing systems)

PT-10.3 Remove from inventory expired/discontinued/slow moving/overstocked pharmaceuticals, durable and nondurable medical equipment, devices, and supplies (including hazardous substances and investigational products) and recalled pharmaceuticals, durable and non-durable medical equipment, devices, and supplies (including hazardous substances and investigational products)

PT-10.4 Dispose of or destroy pharmaceuticals or supplies (for example, hazardous substances, investigational products, controlled substances, non-dispensable products)

PT-10.5 Communicate changes in product availability (for example, formulary changes, recalls, shortages) to pharmacy staff, patient/patient's representative, physicians, and other healthcare professionals

Core Standard 11

Implement and monitor policies and procedures to maintain records, deter theft and/or drug diversion, and quality assurance

Standards

PT-11.1 Maintain proper records and inventories of controlled substances, investigational products, and general pharmaceuticals ordered, received, and removed from inventory

PT-11.2 Perform required inventories and maintain associated records

PT-11.3 Maintain record-keeping systems for repackaging, non-patient specific compounding, recalls, and returns of pharmaceuticals, durable and non-durable medical equipment, devices, and supplies (including hazardous substances and investigational products)

PT-11.4 Compound non-patient specific medications in anticipation of prescription/medication orders

PT-11.5 Know and understand the importance of quality assurance tests on compounded medications (for example, end product testing and validation) and participate in quality assurance programs related to pharmaceuticals, durable and non-durable medical equipment, devices, and supplies (including hazardous substances and investigational products)

PT-11.6 Repackage finished dosage forms for dispensing (for example, unit dose, blister pack, oral syringes)

Domain III. Participating in the Administration and Management of Pharmacy Practice

Core Standard 12

Student will demonstrate basic office administrative proficiencies as they pertain to the healthcare setting

Standards

PT-12.1 Coordinate written, electronic, and oral communications throughout the practice setting (for example, route phone calls, faxes, verbal and written refill authorizations; disseminate policy and procedure changes)

PT-12.2 Update and maintain patient information (for example, insurance information, demographics, provider information) in accordance with federal regulations and professional standards (for example, Health Insurance Portability and Accountability Act [HIPAA])

PT-12.3 Perform quality assessment and assurance audits and generate reports from these audits and collect productivity information (for example, the number of prescriptions filled, fill times, payments collected, rejected claim status)

PT-12.4 Participate in quality assurance activities (for example, medication error prevention, customer satisfaction surveys, and internal audits of processes) and generate quality assurance reports (for example, compile or summarize data collected for evaluation or action plan development, root cause analysis)

PT-12.5 Update, maintain, and use manual or electronic information systems (for example, patient profiles, prescription records, inventory logs, reference materials) in order to perform job related activities

PT-12.6 Use and maintain automated and point-of-care dispensing technology

PT-12.7 Perform billing and accounting functions for products and services (for example, self-pay, third-party adjudication, pharmaceutical discount cards, medication reimbursement)

PT-12.8 Communicate with third-party payers to determine or verify coverage for products and services

PT-12.9 Coordinate and/or participate in staff training and continuing education

PT-12.10 Perform and/or contribute to employee evaluations and competency assessments and participate in the establishment, implementation, and monitoring of the practice setting's policies and procedures

Core Standard 13

Student will demonstrate basic workplace maintenance proficiencies as they pertain to the healthcare setting

Standards

PT- 13.1 Learn and understand the practice setting for compliance with federal regulations and professional standards (for example, Materials Safety Data Sheet [MSDS], Occupational Safety Health Administration [OSHA], Joint Commission on Accreditation of Healthcare Organizations [JCAHO], United States Pharmacopeia [USP])

PT-13.2 Learn and understand the policies and procedures for infection control, handling, disposal, and destruction of pharmaceuticals and supplies (for example, hazardous substances, investigational products, controlled substances, non-dispensable products, radiopharmaceuticals)

PT-13.3 Perform and record routine sanitation, maintenance, and calibration of equipment (for example, automated dispensing equipment, balances, TPN compounders, and refrigerator/freezer temperatures)

Common Core Literacy Standards for Technical Subjects

Reading Standards for Literacy in Technical Subjects 11-12

The standards below begin at grade 11 and define what students should understand and be able to do by the end of grade 12. The CCR anchor standards and high school standards in literacy work in tandem to define college and career readiness expectations – the former providing broad standards, the latter providing additional specificity.

Key Ideas and Details

- 11-12.RT.1 Cite specific textual evidence to support analysis of technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
- 11-12.RT.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
- 11-12.RT.3 Follow precisely a complex multistep procedure when performing technical tasks; analyze the specific results based on explanations in the text.

Craft and Structure

- 11-12.RT.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific context relevant to *grades 11-12 texts and topics*.

- 11-12.RT.5 Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
- 11-12.RT.6 Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.

Integration of Knowledge and Idea

- 11-12.RT.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
- 11-12.RT.8 Evaluate the hypotheses, data, analysis, and conclusions in a technical subject, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
- 11-12.RT.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.

Range of Reading and Level of Text Complexity

- 11-12.RT.10 By the end of grade 12, read and comprehend technical texts in the grades 11-CCR text complexity band independently and proficiently.

Writing Standards for Literacy in Technical Subjects 11-12

The standards below begin at grade 11 and define what students should understand and be able to do by the end of grade 12. The CCR anchor standards and high school standards in literacy work in tandem to define college and career readiness expectations – the former providing broad standards, the latter providing additional specificity.

Text Types and Purposes

- 11-12.WT.1 Write arguments focused on *discipline-specific content*.
- 11-12.WT.2 Write informative/explanatory texts, including technical processes.
- 11-12.WT.3 Students will not write narratives in technical subjects. *Note: Students' narrative skills continue to grow in these grades. The Standards require that students be able to incorporate narrative elements effectively into arguments and informative/explanatory texts. In technical, students must be able to write precise enough descriptions of the step-by-step procedures they use in their technical work that others can replicate them and (possibly) reach the same results.*

Production and Distribution of Writing

- 11-12.WT.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- 11-12.WT.5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
- 11-12.WT.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.

Research to Build and Present Knowledge

- 11-12.WT.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
- 11-12.WT.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation
- 11-12.WT.9 Draw evidence from informational texts to support analysis, reflection, and research.

Range of Writing

- 11-12.WT.10 Write routinely over extended time frames (time for reflection and revision) and shorter time

frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.