New Course Outline

- The PharmD Approval Process for New Course Outlines document provides for more information on next steps and approval timelines.
- The Course Outline Submission Overview document provides more detailed guidelines on course learning objectives, topic outlines/scheduling requirements, and assessment methods.
- The AFPC Educational Outcomes for Professional Programs document provides complete information on roles and key competencies for Pharmacy Degree Programs.

Course Number: PHM113H1

Course Title: Pharmacy Informatics

Outline Version Code:

Course Description:
Pharmacy informatics introduces students to two core types of information: 1) patient-specific information created in the care of patients and 2) knowledge-based information, which includes the scientific literature of health care. Informatics also implies the use of technology in managing information and knowledge. Students will develop the introductory knowledge and skills to assume responsibility for identifying, accessing, retrieving, creating and exchanging relevant patient and health information to ensure safe and effective patient care throughout the medication use process. This course will utilize an innovative e-Resource, hands-on tutorial, large group discussion, and engaging recorded lectures with ample opportunity to integrate knowledge and develop skills in this emerging area.

Semester: ☒ Fall ☐ Winter ☐ Summer

Course Type: ☐ Elective ☐ Selective ☒ Mandatory

1. Course Learning Objectives:
Upon completion of this course, students will have achieved the following level of learning objectives:
Introductory = knowledge and comprehension of concepts, definitions
Intermediate = application of concepts to simple situations
Advanced = application of concepts to more complex situations with ability to synthesize and evaluate

Knowledge
Introductory Level:
Articulate the role of the pharmacist in health informatics. List factors affecting health information exchange in today's society and Canadian healthcare. Articulate the differences between data, information, and knowledge as they apply in the patient care and medication use process. Identify the benefits of, and barriers to access to patient data during the patient care process. Describe the current state of Electronic Records in Ontario (Pharmacy, Personal, Medical and Health). Describe the consumer/patient role within healthcare informatics. Recognize the impact of the Internet on access to information by patients. Demonstrate an understanding of the development and use of drug formularies in community and institutional settings and across the healthcare system. Discuss
technologies used to automate the medication delivery process and their impact on patient safety. Identify common clinical decision support tools

Intermediate Level:

Advanced Level:

**Skills**
Introductory Level:
Locate and access online resources for drug information, patient care, legislation, and health care policy. Cite sources and attribute copyright

Intermediate Level:
Utilize a systematic approach to drug information requests. Read and interpret components of a drug monograph

Advanced Level:

**Attitudes/Values:**
Introductory Level:
Value the need to create knowledge through medication safety reporting systems e.g. Adverse Drug Reaction reporting. Demonstrate a sense of inquiry and appreciation for the scientific process
2. Rationale for Inclusion in the Curriculum:
As health care providers, pharmacists are obliged to discern and translate both the quality and relevance of information, with the goal of safer and more effective drug use to improve patient outcomes. The ability to place information in context and an awareness of information access issues (copyright, privacy, globalization, currency and uncertainty of information) are key to the development of information literacy, an essential skill. As direct patient care providers, pharmacists translate and communicate accurate, relevant medication and health information, in light of specific patient circumstances and needs. The pharmacist also has the responsibility to contribute to the creation, maintenance, and safe-keeping of patient-specific information within the circle of care. This course will provide an introduction to the use of the literature (primary, secondary, and tertiary) in contemporary pharmacy practice, through the exploration of information sources and introductory concepts in informatics.

3. Pre-requisites:
n/a

4. Co-requisites:
n/a
5. Course Contact Hours and Teaching Methodologies:

<table>
<thead>
<tr>
<th>Methodology</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Didactic (lecture)</td>
<td>8</td>
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<tr>
<td>Large group problem-based/ case-based learning</td>
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<td>(group size: )</td>
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<tr>
<td>Laboratory or Simulation</td>
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<tr>
<td>Hours:</td>
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<tr>
<td>Tutorial/Seminar/Workshop/Small Group</td>
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<tr>
<td>(group size: small )</td>
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<tr>
<td>Experiential</td>
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<tr>
<td>Hours:</td>
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<tr>
<td>On-line</td>
<td>3</td>
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<tr>
<td>Other (please specify)</td>
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<tr>
<td>Hours:</td>
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<tr>
<td><strong>Total Course Contact Hours</strong></td>
<td>13</td>
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6. Estimate and description of student’s weekly out-of-class preparation time excluding exam preparation:

The online e-Resource modules are done out of class. Not all lectures will have modules assigned, but those that do can be done on the student’s own schedule according to their pacing, provided they are completed prior to relevant assessments. The total time required to complete modules is approximately 3 hours.

Several recorded lectures are posted online and also completed out of class. These should be completed within the first 4 weeks of class and take approximately 1.5 hours to complete.

7. Topics Covered and Lecture Specific Learning Objectives

**Week 1**

**Lecture Topic:** Introduction to Course & Pharmacy Informatics.
- Online lectures: Selected References (Print & Digital), Monographs
- Print CPS & RxTx online (24 min online lecture)
- ODB/CDI (3 parts – 17 min total online lecture)
- OCP References (13 min online lecture)

**Lecture Learning Objectives:**
- Outline pharmacy informatics course
- Locate the OCP Required References Guide
- Explain the layout & content of the guide
- List the 5 categories of required references
- Outline what references are no longer required & why
- Compare & contrast the differences between print CPS, print Therapeutic Choices & RxTx3
- Locate and access the CPS & CTC online via RxTx
- Identify the various components of the print CPS and RxTx online
- Search and retrieve drug and therapeutic information from the CPS print and RxTx online
- Locate & access the ODB formulary/comparative drug index PDF online and the searchable ODB e-formulary
- Identify the various components of the formulary/CDI PDF and the e-formulary
- Search and retrieve drug benefit information from the formulary/CDI PDF and the e-Formulary
Week 2
Lecture Topic: Introduction to Drug Information. Evidence Based Medicine Overview and Other Drug Information Resources

Lecture Learning Objectives:
- Apply a systematic approach for taking & answering a drug information question
- Accurately classify & categorize drug information questions
- Outline & interpret components of a drug monograph
- Identify the type of information available in Martindale’s, RTx3 & NAPRA and when these references may be useful
- Compare & contrast the differences between print CPS, print Therapeutic Choices & RTx3
- Define evidence based medicine (EBM)
- Compare & contrast the utility of different resources & search strategies to answer common types of drug information questions
- Identify resources to find relevant primary literature & articulate the process to search these secondary resources
- Discuss how guidelines are created using levels and quality of evidence
- Discuss the need to cite sources & attribute copyright

Week 3
Lecture Topic: Drug Information Tutorial

Lecture Learning Objectives:

Week 4
Lecture Topic: Key Concepts in Informatics

Lecture Learning Objectives:
- Articulate the differences between data, information, and knowledge as they apply in the patient care and medication use process
- Explain key information technology concepts and their interrelationships
- Recognize the need for interoperability of health records and data exchange, its impact on collaborative patient centered care
- List factors affecting health information exchange in today's society and Canadian healthcare
- Articulate the role of the pharmacist in health informatics
Week 5
Lecture Topic: No In-class Lecture

Lecture Learning Objectives:

Week 6
Lecture Topic: Consumer Health Informatics

Lecture Learning Objectives:
- Discuss the concepts of e-Health versus Health Informatics
- Define consumer health informatics
- Describe the consumer/patient role within healthcare informatics
- Recognize the impact of the Internet on access to information by patients
- Facilitate appropriate consumer use of health information

Week 7
Lecture Topic: Midterm

Lecture Learning Objectives:

Week 8
Lecture Topic: Documentation & Electronic Health Records (EHR)

Lecture Learning Objectives:
- Recognize commonly used formats (e.g. SOAP) & structures (e.g. print and digital charts) for recording and communicating clinical data
- Identify the various components of electronic records used across the continuum of care (e.g. EHR, EMR, PHR, etc.) and their clinical, administrative and research uses
- Distinguish between tele-health, telemedicine and tele-pharmacy, provide examples of each, and discuss benefits and issues inherent in these health delivery models
Week 9
Lecture Topic: Pharmacy Records & Confidentiality, Pharmacy Automation

Lecture Learning Objectives:
- Comply with legal and regulatory requirements, ethical standards, and organizational policies and procedures for the protection of health information and maintaining privacy, and ensuring security e.g. collection, use, disclosure, access to, protection, and destruction of health information
- Explain technologies and systems used to automate the medication delivery process and impact on patient safety

Week 10
Lecture Topic: Timed Assessment

Lecture Learning Objectives:

Week 11
Lecture Topic: No In-Class Lecture

Lecture Learning Objectives:

Week 12
Lecture Topic: Course Review

Lecture Learning Objectives:
- Review key concepts from course
- Review common questions from course

Week 13
Lecture Topic: Final Exam - Cumulative

Lecture Learning Objectives:
8. Assessment Methodologies Used:

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Course Learning Objectives Addressed</th>
<th>Assessment Method Used</th>
<th>Percent of Course Grade</th>
<th>For Group Work: Individualized or same mark for all group members</th>
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<tbody>
<tr>
<td>☒ Assignment</td>
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<td>Tutorial Participation</td>
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<td>☐ Participation</td>
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<tr>
<td>☐ Mid-term</td>
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<td>☐ Final Exam</td>
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<tr>
<td>☒ Assignment</td>
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<td>In-Class written assignment</td>
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<td>☐ Participation</td>
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<tr>
<td>☐ Assignment</td>
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<td>Written exam (MCQ, short-answer)</td>
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<td>☐ Participation</td>
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<td>☒ Mid-term</td>
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<tr>
<td>☐ Assignment</td>
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<td>Written exam (MCQ)</td>
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<td>☐ Final Exam</td>
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Expectation for pass grades for all Pharmacy courses is 60%

9. Policy and procedure regarding late assignments/examinations/laboratories:
Admission of late students into tutorial, midterm and time assessment is at the discretion of the course coordinator.

If a student is too late to be admitted to their scheduled tutorial time but files a valid petition filed, they will be eligible to undertake a modified tutorial with the coordinator.

If the mid-term examination is missed with a valid petition, the weighting will be added to the final exam.

Students who fail to complete the in-class assessment on the specified date, and who have a valid petition filed with the Registrar's office will be eligible to undertake an alternative assignment based on course requirements, with no academic penalty.

10. Policy and procedure regarding missed assignments/examinations/laboratories:
Space and resources are limited for the tutorials. If a student misses their scheduled tutorial time with a valid petition filed, they will be eligible to undertake a modified tutorial with the coordinator.

If the mid-term examination is missed with a valid petition, the weighting will be added to the final exam.
Students who fail to complete the in-class assessment on the specified date, and who have a valid petition filed with the Registrar’s office will be eligible to undertake an alternative assignment based on course requirements, with no academic penalty.

11. AFPC Education Outcomes addressed (check all those that apply):
- Refer to AFPC Educational Outcomes for Professional Programs for further information about the role and key competencies.

As Care Providers, pharmacy graduates:

**CP1 – Practice within the pharmacist scope of practice and expertise**

- **CP1.1** Apply knowledge from the foundational sciences to make decisions relevant to the contemporary and evolving scope of pharmacist practice;
- **CP1.2** Integrate AFPC Communicator, Collaborator, Leader-Manager, Health Advocate, Scholar, and Professional roles in their practice of pharmacy;
- **CP1.3** Recognize and respond to the complexity, uncertainty and ambiguity inherent in pharmacy practice;
- **CP1.4** Explain the benefits, risks and rationale associated with pharmacist-provided care as an important step in obtaining and documenting consent to pharmacist care;
- **CP1.5** Recognize and take appropriate action when signs, symptoms and risk factors that relate to medical or health problems that fall into the scope of practice of other health professionals are encountered.

**CP2 – Provide patient-centred care**

- **CP2.1** Collect, interpret, and assess relevant, necessary information about a patient’s health-related care needs;
- **CP2.2** Formulate assessments of actual and potential issues and in collaboration with the patient and other health team members as appropriate, prioritize issues to be addressed in a given patient encounter;
- **CP2.3** Create and document plans in collaboration with the patient and other health team members as appropriate, and make recommendations to prevent, improve or resolve issues;
- **CP2.4** Implement plans in collaboration with the patient and other health team members as appropriate, including:
  - CP2.4.1 obtaining consent
  - CP2.4.2 making a referral or consulting others
CP2.4.3 adapting, initiating, renewing/continuing, discontinuing or administering medication as authorized

CP2.4.4a dispensing and/or
CP2.4.4b compounding and/or
CP2.4.4c delegating/authorizing such tasks to others appropriately

CP2.4.5 engaging the patient or care-giver through education, empowerment and self-management, and

CP2.4.6 negotiating the role of pharmacy and non-pharmacy team members in continuity and transitions of care.

☐ CP2.5 Follow-up by monitoring, evaluating progress toward achievement of the patient’s goals of therapy, adjusting plans in collaboration with the patient and health team members across the care continuum.

CP3 – Actively contribute, as an individual and as a member of a team providing care, to the continuous improvement of health care quality and patient safety

☒ CP3.1 Recognize and respond to harm and potential harm from health care delivery, including patient safety incidents;

☒ CP3.2 Adopt strategies that promote patient safety and address human and system factors;

As Communicators, pharmacy graduates:

CM1 – Communicate in a responsible and responsive manner that encourages trust and confidence

☒ CM1.1 Select and use oral, non-verbal and written communication strategies (tools, techniques, technologies, etc.) effectively so that the patient’s best interests are foremost;

☐ CM1.2 Provide timely, clear responses that are tailored to the context and audience;

☐ CM1.3 Express facts, evidence, opinions and positions accurately and effectively, with clarity and confidence;

☐ CM1.4 Listen, actively solicit and respond appropriately to ideas, opinions and feedback from others;

☐ CM1.5 Use language, pace, tone, and non-verbal communication that is suitable for:

  a) the intended outcomes of the communication, and
  b) the complexity, ambiguity, urgency and/or difficulty of a situation, conversation or conflict

☐ CM1.6 Seek and synthesize relevant information from others in a manner that ensures common understanding and where applicable, clarifies and secures agreement and/or consent;

☒ CM1.7 Compose and share oral, written, and electronic information in a manner that optimizes patient safety, dignity, confidentiality, and privacy.
CM2 – Communicate in a manner that supports a team approach to health promotion and health care

☐ CM2.1 Engage in respectful, empathetic, compassionate, non-judgmental, culturally safe, tactful conversations with patients, communities, populations, and health team members;

☐ CM2.2 Demonstrate awareness of the impact of one’s own experience level, professional culture, biases and power and hierarchy within the health team on effective working relationships, communication and conflict resolution with health team members and adapt the approach to the situation appropriately;

☐ CM2.3 Demonstrate accuracy and appropriateness of communication as well as respect for the role of other health team members when disclosing information about harmful or potentially harmful situations;

☐ CM2.4 In word and in action, convey the importance of teamwork in patient-centred care, patient safety, health care quality improvement and health program delivery.

As Collaborators, pharmacy graduates:

CL1 – Work effectively with members of the health team including patients, pharmacy colleagues and individuals from other professions

☐ CL1.1 Establish and maintain positive relationships;

☐ CL1.2 Recognize, respect and negotiate the roles and shared/overlapping responsibilities of team members;

☐ CL1.3 Join with others in respectful, effective shared decision-making.

CL2 – Hand over the care of the patient to other pharmacy team members and non-pharmacy team members to facilitate continuity of safe patient care

☒ CL2.1 Determine when and how care should be handed over to another team member;

☒ CL2.2 Recognize, respect and honour the negotiate shared and overlapping responsibilities of patients, pharmacy team members and other health members when handovers occur;

☐ CL2.3 Demonstrate safe handover of care, using oral, written, and electronic communication, during a patient transition to a different care provider or setting.

As Leader-Managers, pharmacy graduates:

LM1 – Contribute to optimizing health care delivery and pharmacy services

☐ LM1.1 Work with others to apply quality improvement strategies and techniques to optimize pharmacy care;

☒ LM1.2 Contribute to a culture of patient safety;
LM1.3 Confirm the quality, safety, and integrity of products;
LM1.4 Use health informatics to improve the quality of care, manage resources and optimize patient safety.

LM2 – Contribute to the stewardship of resources in health care systems
☐ LM2.1 Apply evidence and management processes to achieve cost appropriate care;
☐ LM2.2 Allocate health care resources for optimal patient care;
☐ LM2.3 Contribute to the management of finances and health human resources in pharmacy practice settings;

LM3 – Demonstrate leadership skills
☐ LM3.1 Demonstrate leadership skills to enhance pharmacy practice and health care.

LM4 – Demonstrate management skills
☐ LM4.1 Work with others to apply the principles of effective management and supervision of health human resources and medication use systems;
☐ LM4.2 Use effective strategies to manage and improve their own practice of pharmacy.

As Health Advocates, pharmacy graduates:

HA1 – Respond to an individual patient’s health needs by advocating with the patient within and beyond the patient care environment
☐ HA1.1 Work with patients to address determinants of health that affect them and their access to needed health services or resources;
☐ HA1.2 Work with patients to increase opportunities to adopt healthy behaviours;
☐ HA1.3 Incorporate disease prevention, health promotion and health surveillance into interactions with individual patients.

HA2 – Respond to needs of communities or populations they serve by advocating with them for system-level change in a socially accountable manner
☐ HA2.1 Work with community or population to identify the determinants of health that affect them;
☐ HA2.2 Participate in health promotion and disease prevention programs.

As Scholars, pharmacy graduates:
SC1 – Apply medication therapy expertise to optimize pharmacy care, pharmacy services and health care delivery

☒ SC1.1 Use knowledge and problem-solving to arrive at recommendations and decisions that are appropriate, accurate, and practical;
☐ SC1.2 Use professional experience to solve routine, previously encountered problems;
☒ SC1.3 Use established decision-making frameworks and apply learning required to manage new situations and problems.

SC2 – Integrate best available evidence into pharmacy practice

☒ SC2.1 Generate focused questions related to needs for information, recommendations and decisions in practice;
☒ SC2.2 Use systematic approaches in the search for best available evidence;
☒ SC2.3 Critically appraise health-related research and literature;
☒ SC2.4 Incorporate best available evidence in the decision-making process.

SC3 – Contribute to the creation of knowledge or practices in the field of pharmacy

☒ SC3.1 Apply scientific principles of research and scholarly inquiry;
☐ SC3.2 Apply ethical principles that underlie research and scholarly inquiry.

SC4 – Teach other pharmacy team members, the public and other health care professionals including students

☐ SC4.1 Provide effective education to others;
☐ SC4.2 Employ appropriate teaching roles when teaching others;
☐ SC4.3 Deliver effective feedback in teaching and learning situations;
☐ SC4.4 Use appropriate learning assessment and evaluation strategies when working with patients, team members, students and teachers.

As Professionals, pharmacy graduates:

PR1 – Committed to apply best practices and adhere to high ethical standards in the delivery of pharmacy care

☐ PR1.1 Exhibit professional behaviour whether face-to-face, in writing, or via technology-enabled communication. Professional; behaviour includes, but is not limited to:
a) demonstrating honesty, integrity, humility, commitment, altruism, compassion, respect for diversity and patient autonomy;
b) being accessible, diligent, timely and reliable in service to others;
c) abiding by the principle of non-abandonment;
d) maintaining appropriate interpersonal boundaries;
e) maintaining professional composure, demeanor, and language even in difficult situations, and;
f) maintaining privacy and confidentiality;

☐PR1.2 Use ethical frameworks as one component of professional judgment;

☐PR1.3 Recognize and respond to situations presenting ethical dilemmas, including conflicts of interest;

☐PR1.4 Engage in activities that:

a) protect the public, and;
b) advance the practice of pharmacy.

PR2 – Able to recognize and respond to societal expectations of regulated health care professionals

☐PR2.1 Take responsibility and accountability for actions and inactions;

☐PR2.2 Demonstrate a commitment to patient safety and quality improvement;

☒PR2.3 Honour the laws, ethical codes, and regulatory requirements (by-laws, standards, policies) that govern the self-regulated profession of pharmacy;

☒PR2.4 Demonstrate an understanding of federal, provincial/territorial, and municipal laws, policies and standards that apply to pharmacy workplaces;

☐PR2.5 Demonstrate an ability to maintain competence to practice through evaluating areas for improvement and planning, undertaking learning activities to address limitations in competence and/or performance and incorporating learning into practice;

☐PR2.6 Identify and respond to unprofessional, unethical, and illegal behaviours in pharmacists, other pharmacy team members, and other health professionals.

PR3 – Committed to self-awareness in the management of personal and professional well being

☐PR3.1 Set professional and personal goals, priorities, and manage their time to balance patient care, workflow, and practice requirements;

☐PR3.2 Examine, reflect upon, and manage personal attributes (knowledge, skills, beliefs, biases, motivations, emotions, etc.) that could influence self-development and professional performance;

☐PR3.3 Adapt their practice of pharmacy to fulfill evolving professional roles;
PR3.4 Recognize and respond to self and colleagues in need.