New Course Outline

- The PharmD Approval Process for New Course Outlines document provides 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: PHM 301H1

Course Title: Pharmacotherapy 6 - Oncology, Hematology & Immunology Pharmacotherapy

Outline Version Code:

Course Description:

This course is designed to provide pharmacy students with the knowledge in pathobiology, pharmacology, pharmacotherapy, clinical pharmacokinetics required to be a practitioner in oncology, haematology & immunology therapeutics. The course will be taught using a variety of techniques including on-line lectures, case-based learning and small interactive group learning.

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:

**Oncology:**

1. Discuss the epidemiology of cancer including various causative factors (environmental versus non-environmental)
2. Identify the main treatment modalities of cancer (surgery, radiation and systemic therapy) including their role and use at various stages of the disease process.
3. Develop prevention and management strategies for common non-hematological adverse effects of systemic anticancer treatment
4. Develop a therapeutic plan for the management of cancer induced pain

**Hematology**

1. Explain the normal process of hematopoiesis including the formation of red and white blood cells and platelets
2. Identify various disorders of abnormal hematopoiesis including Thalassemia, Sickle Cell disease, Hemochromatosis, Thrombocytopenia, Aplastic Anemia

Intermediate Level:

**Oncology:**

1. Describe the pathophysiology of cancer including the hallmarks of cancer, the metastatic process, tumour biology, tumour markers, and mechanisms of resistance.
2. Evaluate the role and appropriateness of various screening methods (self-examination, clinical examination, mammography, Fecal Occult Blood Test, colonoscopy, sigmoidoscopy biological markers, CT scan, MRI, etc., ) for people of varying risks of developing various cancers (e.g. breast, colon, cervical, prostate) including the benefits/risks, limitations, age groups affected, frequency of screening and cost.
3. Categorize the different intents of treatment with chemotherapy and radiation, including neoadjuvant, adjuvant and palliative treatment.
4. Compare and contrast the antineoplastic agents utilized in the treatment of various cancers, based on the following criteria: mechanism of action, mechanism of resistance, pharmacokinetics, pharmacodynamics, pharmacogenomics, adverse effects, contraindications, drug interactions,(drug-drug, drug-food, drug-laboratory), convenience, cost, onset of action, formulations, stability and sterility.
5. Explain the rationale for combination chemotherapy to treat various types of cancer.
6. Explain the mechanism of action, place in therapy and role in conjunction with chemotherapy. of targeted therapies (e.g., vascular endothelial growth factor inhibitors, epithelial growth factor receptor inhibitors,).
7. Explain how the formulation and design of drug dosage forms can affect drug delivery and anti-cancer efficacy.
8. Discuss for the following chemotherapy-induced non-hematological adverse effects (nausea/vomiting, mucositis), the pathophysiology, epidemiology, clinical presentation, consequences, risk factors and natural history.
9. Describe the mechanism of various adverse effects related to biologic/targeted therapies (e.g., vascular endothelial growth factor inhibitors, epithelial growth factor inhibitors, monoclonal antibodies), including epidemiology, clinical presentation, consequences (clinical impact) risk factors, as well as non-pharmacological & pharmacological management.
10. Compare and contrast the relevant available classes of antiemetics used for the treatment of chemotherapy-induced nausea and vomiting based on the following criteria: indication, mechanism of
action, efficacy, pharmacokinetics, pharmacodynamics, pharmacogenomics, adverse effects, contraindications, drug interactions, (drug-drug, drug-food, drug-laboratory), convenience, cost, onset of action, formulations, stability and sterility.

11. Compare and contrast the relevant available pharmacological and non-pharmacological treatment options used for the prevention and treatment of chemotherapy and radiation-induced mucositis based on the following criteria: indication, mechanism of action, efficacy, pharmacokinetics, pharmacodynamics, pharmacogenomics, adverse effects, contraindications, drug interactions, (drug-drug, drug-food, drug-laboratory), convenience, cost, onset of action, formulations, stability and sterility.


13. Discuss the pathophysiology, epidemiology, clinical presentation, consequences, risk factors and natural history for pain related to cancer.

14. Compare and contrast the relevant available classes of analgesics used for the treatment of pain related to cancer based on the following criteria: indication, mechanism of action, efficacy, pharmacokinetics, pharmacodynamics, pharmacogenomics, adverse effects, contraindications, drug interactions, (drug-drug, drug-food, drug-laboratory), convenience, cost, onset of action, formulations, stability and sterility.

Hematology

1. Discuss for the following chemotherapy-induced haematological adverse effects (anemia, neutropenia), the pathophysiology, epidemiology, clinical presentation, consequences, risk factors and natural history.

2. Compare and contrast the relevant available classes of granulocyte colony-stimulating factors (filgrastim, pegfilgrastim) used for the treatment of chemotherapy-induced neutropenia, based on the following criteria: indication, mechanism of action, efficacy, pharmacokinetics, pharmacodynamics, pharmacogenomics, adverse effects, contraindications, drug interactions, (drug-drug, drug-food, drug-laboratory), convenience, cost, onset of action, formulations, stability and sterility.

3. Compare and contrast the relevant available classes of erythropoiesis stimulating agents (epoetin-alfa, darbepoetin) used for the treatment of chemotherapy-induced anemia, based on the following criteria: indication, mechanism of action, efficacy, pharmacokinetics, pharmacodynamics, pharmacogenomics, adverse effects, contraindications, drug interactions, (drug-drug, drug-food, drug-laboratory), convenience, cost, onset of action, formulations, stability and sterility.


5. Discuss the pathophysiology, epidemiology, clinical presentation, consequences, risk factors, natural history and management of common haematological malignancies (e.g. lymphoma, leukemia, multiple myeloma).

Immunology - Knowledge

1. Discuss the pathophysiology, epidemiology, clinical presentation, risk factors, drugs that may cause/exacerbate, natural history, diagnosis and differential diagnosis for the following conditions: inflammatory bowel disease and rheumatoid arthritis.

2. Identify the appropriate (laboratory, clinical biochemistry, pathology, histology, medical imaging) findings use in the diagnosis and on-going monitoring of inflammatory bowel disease and rheumatoid arthritis.

3. Explain the importance of the immune system in solid organ transplantation.

4. Compare and contrast the relevant pharmacological and nonpharmacological treatment options used for the treatment of inflammatory bowel disease, including 5-ASA, corticosteroids, immunosuppressants, antibiotics, and tumour necrosis factor antagonists, based on the following criteria: indications, mechanism of action, pharmacokinetics, pharmacodynamics, adverse effects, contraindications, drug interactions (drug-drug, drug-food, drug-laboratory), convenience, cost, onset of action, formulations, stability, and with special attention to geriatrics.
5. Compare and contrast the relevant pharmacological treatment options for rheumatoid arthritis including the place in therapy of non-steroidal anti-inflammatory agents, DMARDs and tumour necrosis factor antagonists, based on the following criteria: indications, mechanism of action, pharmacokinetics, pharmacodynamics, adverse effects, contraindications, drug interactions (drug-drug, drug-food, drug-laboratory), convenience, cost, onset of action, formulations, stability, and with special attention to geriatrics.

6. Compare and contrast the relevant pharmacological treatment options used to prevent rejection in solid organ transplantation, based on the following criteria: indications, mechanism of action, pharmacokinetics, pharmacodynamics, adverse effects, contraindications, drug interactions (drug-drug, drug-food, drug-laboratory), convenience, cost, onset of action, formulations, stability and sterility.

7. Describe the non-pharmacologic management for the selected conditions.

Advanced Level:

N/A

Skills
Introductory Level:

1. Analyze relevant information from subjective and objective sources (ROS, medical imaging, diagnostic test, biochemical markers) to determine drug therapy problems, urgency, and priority for a given clinical situation.
2. Demonstrate the ability to critique and interpret results from observational studies, randomized controlled trials and meta-analyses in hematology/oncology/immunology.

Intermediate Level:

1. Select relevant data from: review of systems, laboratory tests, medical imaging to assess drug therapy needs.
2. Apply relevant findings from review of systems, laboratory tests and medical imaging to determine actual and potential drug therapy needs.
3. Interpret various prognostic factors related to cancer and their impact on treatment approaches.
4. Justify the selection of a preferred antiemetic regimen for a selected chemotherapy regimen based on assessment of its emetogenic potential.
5. Assess the use of granulocyte colony-stimulating factors (filgrastim, pegfilgrastim) for patients receiving selected chemotherapy regimens, based on patient risk factors, disease-related factors and treatment-related factors, in the prophylactic and treatment settings.
6. Assess the use of erythropoiesis stimulating agents (epoetin-alfa, darbepoetin) for patients receiving selected chemotherapy regimens, based on patient risk factors, disease-related factors and treatment-related factors in the prophylactic and treatment settings.
7. Develop and justify a care plan with follow up for a given clinical situation.
8. Evaluate the quality, accuracy, and completeness of the care plan.

Advanced Level:

N/A
Attitudes/Values:

Introductory Level:

N/A

Intermediate Level:

1. The student will undertake assessment and care plan development activities in a manner respecting patient autonomy and the individual therapeutic goals.
2. The student will use interprofessional patient centered care principles to reach decisions for therapeutic alternatives.
3. The student will demonstrate respect and collaboration in team functioning

Advanced Level:

N/A

2. Rationale for Inclusion in the Curriculum:

According to Health Canada cancer is the number one killer of Canadians and it is projected that as the population ages and advances in therapy are made more patients will be living with the disease in the coming years. Traditional cancer therapies have been delivered in the hospital setting because of the need for intravenous administration. However, increasingly new therapies for cancer will be orally administered. Because of cancer prevalence and changing therapeutic strategies aimed at making cancer a chronic disease, pharmacists will be called upon more often to become involved in the care of patients with cancer. It is essential that the graduating pharmacists of the future have a sound foundation in cancer pathophysiology and management. Not only is a greater understanding of the immunological basis of cancer leading to new therapies; but immunological based therapies are increasingly seen as the backbone of disease management for irritable bowel disease (IBD) and rheumatoid arthritis (RA). An understanding of the use of biological agents in cancer complements and will aid pharmacy students in their support of patients with IBD and RA. Hematology is the study of cellular blood components (red and white blood cells and platelets) and coagulation. An understanding of various disease states and drugs affecting the cellular components of blood is essential to daily pharmacy practice. The key components of the body's immune response are white blood cells and their function. While the immune response is essential in preventing and combating various diseases; its disregulation can result in diseases such as IBD and RA. Modifying the immune response has become the mainstay of therapy for these conditions. Another therapeutic area where regulation of the immune response is critical is the prevention of rejection following transplantation (solid organ and allogeneic bone marrow/stem cell). Finally, there is a growing body of literature linking cancer and the immune system. New therapies are being developed to modulate the immune system which cross the traditional therapeutic boundaries of oncology, haematology, rheumatology, gastroenterology, etc. We have developed this course to help students understand the commonality which exists across traditional therapeutic areas so that knowledge in one area can be applied in another. While the primary focus of the lectures are oncology related, many of the principles learned can be applied to the other areas of haematology and immunology. In selecting topics for the course we also did not want to duplicate content from previous courses (e.g. anaemia management). We also feel that the relative weight given to the various therapeutic areas is also reflective of the likelihood a practicing pharmacist is to encounter these patients in day to day practice.
3. Pre-requisites:
N/A

4. Co-requisites:
PHM305H1 (MTM4)

5. Course Contact Hours and Teaching Methodologies:

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<th>Didactic (lecture)</th>
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<tr>
<td><strong>Total Course Contact Hours</strong></td>
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6. Estimate and description of student's weekly out-of-class preparation time excluding exam preparation:

Review learning objectives and workshop preparatory materials and recommended readings (3 –7 hrs/ week)

7. Topics Covered and Lecture Specific Learning Objectives

**Week 1**

**Lecture Topic:** Overview, introduction & Oncology Basics; Pharmacology of Cancer Therapy; Pharmaceutics of Chemotherapy

**Lecture Learning Objectives:**

- Overview, introduction & Oncology Basics (didactic – 2 hr): Review the course and workshop outline; Discuss the importance of cancer to Canadians; Describe the basic principles of cancer treatment; List the Hallmarks of cancer; Discuss the differences between traditional anticancer therapy and targeted therapy
- Pharmacology of Cancer Therapy (Didactic – 1 hr): Explain the process of development of cancer; Discuss the evolution of anticancer drug development; Describe the different classes of anticancer therapy and their mechanisms of action; Distinguish and discuss the major mechanisms of action, drug interactions and toxicities of conventional antineoplastics; Distinguish and discuss the major mechanisms of action, drug interactions and toxicities of targeted therapies
- Pharmaceutics of Chemotherapy (didactic – 1 hr): Acquire basic knowledge of various formulations for cancer (chemo)therapy; Understand the problems of cancer chemotherapy; Understand how nanoparticle formulations can enhance cancer chemotherapy while reducing toxicity to normal tissue.
Week 2
Lecture Topic: Pediatrics (didactic – 2 hr); Monoclonal antibodies and small molecule inhibitors (didactic – 1 hr)

Lecture Learning Objectives:

- WORKSHOP 1 CYCLE: Oncology basics – pharmacology, screening and treatment principles (online – 1 hr, group-based learning: 2 hr): Discuss the importance of screening for cancers such as colon or breast; Outline the principles of cancer therapy; Identify resources to determine best management of cancer based on clinical, pathology and patient characteristics.
- Pediatrics (didactic – 2 hr): List common types of pediatric cancers and their prognosis; Describe drug administration techniques which are relatively unique to childhood cancer: Routes of drug administration: intrathecal, Ommaya reservoir, Central venous catheters, subcutaneous catheters; List actual and potential applications of pharmacogenetics in childhood cancer and describe how they are/might be used to modify treatment; Describe procedures for safe administration of chemotherapy at home.; Discuss the impact of adherence on overall survival and mechanisms that pharmacists can apply to improve adherence; Justify the recommended long term follow-up guidelines for childhood cancer survivors who have received anthracyclines.
- Monoclonal antibodies and small molecule inhibitors (didactic – 1 hr): Describe the development and research of Mabs and small molecule inhibitors; Advanced Cancer management– focus on breast cancer (group-based). Compare and contrast general pharmacokinetics and pharmacodynamics of Mabs and small molecule inhibitors.

Week 3
Lecture Topic: Pediatrics (didactic – 2 hr); Monoclonal antibodies and small molecule inhibitors (didactic – 1 hr)

Lecture Learning Objectives:

- WORKSHOP 1 CYCLE: Oncology basics – pharmacology, screening and treatment principles (online – 1 hr, group-based learning: 2 hr): Discuss the importance of screening for cancers such as colon or breast; Outline the principles of cancer therapy; Identify resources to determine best management of cancer based on clinical, pathology and patient characteristics.
- Pediatrics (didactic – 2 hr): List common types of pediatric cancers and their prognosis; Describe drug administration techniques which are relatively unique to childhood cancer: Routes of drug administration: intrathecal, Ommaya reservoir, Central venous catheters, subcutaneous catheters; List actual and potential applications of pharmacogenetics in childhood cancer and describe how they are/might be used to modify treatment; Describe procedures for safe administration of chemotherapy at home.; Discuss the impact of adherence on overall survival and mechanisms that pharmacists can apply to improve adherence; Justify the recommended long term follow-up guidelines for childhood cancer survivors who have received anthracyclines.
- Monoclonal antibodies and small molecule inhibitors (didactic – 1 hr): Describe the development and research of Mabs and small molecule inhibitors; Advanced Cancer management– focus on breast cancer (group-based). Compare and contrast general pharmacokinetics and pharmacodynamics of Mabs and small molecule inhibitors.

Week 4
Lecture Topic: Personalized Medicine (didactic – 1 hr); Pharmaceutics of biologic agents (didactic – 1 hr); Pharmaceutics of biologic agents (didactic – 1 hr); Pharmacokinetics of biologic agents (didactic – 1 hr); Pain Basics (didactic – 1 hr)
Lecture Learning Objectives:

- **WORKSHOP 2 CYCLE: Advanced Cancer management-- focus on endocrine therapies (e.g. for breast cancer) (online - 1 hr, group-based learning: 2 hr):** Review the epidemiology and risk factors of breast cancer; Outline the role of gonadal hormones on cancer pathology; Discuss the epidemiology of HR+ breast cancer; Explain the implication of ER, PR status on treatment decisions; List the prognostic and predictive factors for breast cancer treatment; Discuss the role of endocrine agents in early and advanced stage breast cancer; Discuss the principles of multiple lines of therapy in advanced cancer; Outline the principles of breast cancer therapy; Review the role and pharmacology of endocrine therapy for breast cancer.

- **Personalized Medicine (didactic – 1 hr):** Discuss the basics of cellular processes that contribute to cancer growth and proliferation, considering extracellular and intracellular signals for proliferation, apoptosis, invasion and migration; Contrast pharmacogenetics and molecular aberrations and how treatment choice and dosing decisions can be guided by their presence or absence; Review the role of genetic polymorphisms in treatment response and toxicities; Role of cytochrome and p-glycoprotein in drug resistance.

- **Pharmacy of biologic agents (didactic – 1 hr):** List the therapeutic uses for key monoclonal antibodies; Discuss the pharmacology of monoclonal antibodies; Outline the historic and current processes for producing monoclonal antibodies.

- **Pharmacokinetics of biologic agents (didactic – 1 hr):** List the therapeutic uses for key monoclonal antibodies; Discuss the absorption of monoclonal antibodies and how the characteristics of absorption and bioavailability may be altered depending on the route of administration; Discuss considerations that must be taken when a monoclonal antibody such as rituximab is changed from IV administration to SC; Describe the distribution and elimination pathways of monoclonal antibodies such as trastuzumab and rituximab, and the role of the immune system in these processes; Discuss how the pharmacokinetics of mAbs can impact dosing decisions (e.g. need for loading doses, dosing by weight versus body surface area); List mechanisms for potential interactions (if any) that must be considered in patients receiving mAbs

- **Pain Basics (didactic– 1 hr):** Compare and contrast acute pain, chronic non-cancer pain, chronic cancer pain; List the different classes of drugs used for managing pain; Discuss the role of pharmacotherapy in pain management; Discuss the pathophysiology of pain; Discuss the different types of pain

**Week 5**

**Lecture Topic:** Personalized Medicine (didactic – 1 hr); Pharmacy of biologic agents (didactic – 1 hr); Pharmacy of biologic agents (didactic – 1 hr); Pharmacokinetics of biologic agents (didactic – 1 hr); Pain Basics (didactic– 1 hr)

Lecture Learning Objectives:

- **WORKSHOP 2 CYCLE: Advanced Cancer management-- focus on endocrine therapies (e.g. for breast cancer) (online - 1 hr, group-based learning: 2 hr):** Review the epidemiology and risk factors of breast cancer; Outline the role of gonadal hormones on cancer pathology; Discuss the epidemiology of HR+ breast cancer; Explain the implication of ER, PR status on treatment decisions; List the prognostic and predictive factors for breast cancer treatment; Discuss the role of endocrine agents in early and advanced stage breast cancer; Discuss the principles of multiple lines of therapy in advanced cancer; Outline the principles of breast cancer therapy; Review the role and pharmacology of endocrine therapy for breast cancer.
- Personalized Medicine (didactic – 1 hr): Discuss the basics of cellular processes that contribute to cancer growth and proliferation, considering extracellular and intracellular signals for proliferation, apoptosis, invasion and migration; Contrast pharmacogenetics and molecular aberrations and how treatment choice and dosing decisions can be guided by their presence or absence; Review the role of genetic polymorphisms in treatment response and toxicities; Role of cytochrome and p-glycoprotein in drug resistance.

- Pharmaceutics of biologic agents (didactic – 1 hr): List the therapeutic uses for key monoclonal antibodies; Discuss the pharmacology of monoclonal antibodies; Outline the historic and current processes for producing monoclonal antibodies.

- Pharmacokinetics of biologic agents (didactic – 1 hr): List the therapeutic uses for key monoclonal antibodies; Discuss the absorption of monoclonal antibodies and how the characteristics of absorption and bioavailability may be altered depending on the route of administration; Discuss considerations that must be taken when a monoclonal antibody such as rituximab is changed from IV administration to SC; Describe the distribution and elimination pathways of monoclonal antibodies such as trastuzumab and rituximab, and the role of the immune system in these processes; Discuss how the pharmacokinetics of mAbs can impact dosing decisions (eg. need for loading doses, dosing by weight versus body surface area); List mechanisms for potential interactions (if any) that must be considered in patients receiving mAbs

- Pain Basics (didactic– 1 hr): Compare and contrast acute pain, chronic non-cancer pain, chronic cancer pain; List the different classes of drugs used for managing pain
  - Discuss the role of pharmacotherapy in pain management
  - Discuss the pathophysiology of pain; Discuss the different types of pain

**Week 6**

**Lecture Topic:** GI Toxicities of Chemotherapy CINV and diarrhea (group-based learning: 2 hr, online – 1 hr, didactic – 1 hr); Advanced Symptom Management – Pain (didactic – 2 hr)

**Lecture Learning Objectives:**

- WORKSHOP 3 CYCLE: GI Toxicities of Chemotherapy CINV and diarrhea (group-based learning: 2 hr, online – 1 hr, didactic – 1 hr): Identify the phases and corresponding mechanisms behind chemotherapy-induced nausea and vomiting; Describe the risk factors for predicting nausea/vomiting chemotherapy-induced nausea/vomiting; Develop appropriate anti-emetic regimens to prevent CINV; Review pharmacological strategies to manage breakthrough CINV; Make pharmacological and non-pharmacological recommendations to prevent, treat or support patients experiencing CINV; Describe the pathophysiology, epidemiology and risk factors of mucositis; Recommend measures to limit or prevent mucositis; Describe the pathophysiology, epidemiology and risk factors of chemotherapy- and immunotherapy-induced diarrhea; Recommend measures to limit or prevent chemotherapy- and immunotherapy-induced diarrhea; Make pharmacological and non-pharmacological recommendations to prevent, treat or support patients experiencing mucositis or diarrhea; Develop a therapeutic plan for patients CINV prophylactic regimen, for the treatment of CINV, mucositis or diarrhea

- Advanced Symptom Management – Pain (didactic – 2 hr): Discuss the pathophysiology, epidemiology, clinical presentation, consequences, risk factors and natural history for nociceptive and neuropathic pain specific to cancer and palliation; Make a proper assessment of pain in a patient with cancer; Compare and contrast the relevant available classes of adjuvants and analgesics used for the treatment of pain related to cancer based on the following criteria: indication, mechanism of action, efficacy, pharmacokinetics, pharmacodynamics, pharmacogenomics, adverse effects, drug interactions (drug-drug, drug-food, drug-laboratory), convenience, cost; Develop and justify a rational pain regimen depending on the clinical presentation of a patient’s pain; Review methadone in the use of cancer pain and common dosing strategies; Describe the non-pharmacologic management for the selected conditions; Develop a pharmacy care plan for the management of cancer induced pain.
**Week 7**

**Lecture Topic:** GI Toxicities of Chemotherapy CINV and diarrhea (group-based learning: 2 hr, online – 1 hr, didactic – 1 hr); Advanced Symptom Management – Pain (didactic – 2 hr)

**Lecture Learning Objectives:**

- **WORKSHOP 3 CYCLE:** GI Toxicities of Chemotherapy CINV and diarrhea (group-based learning: 2 hr, online – 1 hr, didactic – 1 hr): Identify the phases and corresponding mechanisms behind chemotherapy-induced nausea and vomiting; Describe the risk factors for predicting nausea/vomiting chemotherapy-induced nausea/vomiting; Develop appropriate anti-emetic regimens to prevent CINV; Review pharmacological strategies to manage breakthrough CINV; Make pharmacological and non-pharmacological recommendations to prevent, treat or support patients experiencing CINV; Describe the pathophysiology, epidemiology and risk factors of mucositis; Recommend measures to limit or prevent mucositis; Describe the pathophysiology, epidemiology and risk factors of chemotherapy- and immunotherapy-induced diarrhea; Recommend measures to limit or prevent chemotherapy- and immunotherapy-induced diarrhea; Make pharmacological and non-pharmacological recommendations to prevent, treat or support patients experiencing mucositis or diarrhea; Develop a therapeutic plan for patients CINV prophylactic regimen, for the treatment of CINV, mucositis or diarrhea

- Advanced Symptom Management – Pain (didactic – 2 hr): Discuss the pathophysiology, epidemiology, clinical presentation, consequences, risk factors and natural history for nociceptive and neuropathic pain specific to cancer and palliation; Make a proper assessment of pain in a patient with cancer; Compare and contrast the relevant available classes of adjuvants and analgesics used for the treatment of pain related to cancer based on the following criteria: indication, mechanism of action, efficacy, pharmacokinetics, pharmacodynamics, pharmacogenomics, adverse effects, drug interactions (drug-drug, drug-food, drug-laboratory), convenience, cost; Develop and justify a rational pain regimen depending on the clinical presentation of a patient’s pain; Review methadone in the use of cancer pain and common dosing strategies; Describe the non-pharmacologic management for the selected conditions; Develop a pharmacy care plan for the management of cancer induced pain.

**Week 8**

**Lecture Topic:** Malignant Hematology (didactic – 1.5 hr); Immune System Dysregulation, Disease and Therapy (didactic - 2 hr)

**Lecture Learning Objectives:**

- **WORKSHOP 4 CYCLE:** Hematology & Hematologic Toxicities of Chemotherapy (online – 1 hr, group-based learning: – 2 hr): Explain the pathophysiology of common non-malignant disorders of red and white blood cells and platelets; Identify various disorders of abnormal hematopoiesis including Thalassemia, Sickle Cell disease; Thrombocytopenia, Aplastic Anemia: Distinguish their pathophysiology, epidemiology, clinical presentation, consequences, risk factors, natural history and management; Discuss the pathophysiology, epidemiology, clinical presentation, consequences, risk factors and natural history of anemia and neutropenia; Compare and contrast the relevant available classes of granulocyte colony-stimulating factors (filgrastim, pegfilgrastim) used for the treatment of chemotherapy-induced neutropenia, based on the following criteria: indication, mechanism of action, efficacy, pharmacokinetics, pharmacodynamics, pharmacogenomics, adverse effects, contraindications, drug interactions (drug-drug, drug-food, drug-laboratory), convenience, cost, onset of action, formulations, stability and sterility; Compare and contrast the relevant available classes of erythropoiesis stimulating agents (epoetin-alfa, darbepoetin) used for the treatment of chemotherapy-induced anemia, based on the following criteria: indication, mechanism of action, efficacy, pharmacokinetics, pharmacodynamics, pharmacogenomics, adverse effects, contraindications, drug interactions (drug-drug, drug-food, drug-laboratory), convenience, cost, onset of action, formulations, stability and sterility;
interactions,(drug-drug, drug-food, drug-laboratory), convenience, cost, onset of action, formulations, stability and sterility; Develop a therapeutic plan for the prevention and management of neutropenia and anemia associated with anticancer treatment.

- Malignant Hematology (didactic – 1.5 hr): Distinguish the difference between solid cancers and hematologic malignancies; Discuss the pathophysiology, epidemiology, clinical presentation, consequences, risk factors, natural history of common lymphomas, leukemias, and multiple myeloma; Outline the general principles of management and the role of surgery, radiation and/or chemotherapy for lymphomas, leukemias, and multiple myeloma

- Immune System Dysregulation, Disease and Therapy (didactic - 2 hr): Describe the function of the immune system; Discuss the various components of the immune system
  - Describe how tumors avoid immune system destruction
  - Describe the pharmacology of cancer-immunotherapies.

**Week 9**

**Lecture Topic:** Malignant Hematology (didactic – 1.5 hr); Immune System Dysregulation, Disease and Therapy (didactic - 2 hr)

**Lecture Learning Objectives:**

- WORKSHOP 4 CYCLE: Hematology & Hematologic Toxicities of Chemotherapy (online – 1 hr, group-based learning: – 2 hr): Explain the pathophysiology of common non-malignant disorders of red and white blood cells and platelets; Identify various disorders of abnormal hematopoiesis including Thalassemia, Sickle Cell disease; Thrombocytopenia, Aplastic Anemia: Distinguish their pathophysiology, epidemiology, clinical presentation, consequences, risk factors, natural history and management; Discuss the pathophysiology, epidemiology, clinical presentation, consequences, risk factors and natural history of anemia and neutropenia; Compare and contrast the relevant available classes of granulocyte colony-stimulating factors (filgrastim, pegfilgrastim) used for the treatment of chemotherapy-induced neutropenia, based on the following criteria: indication, mechanism of action, efficacy, pharmacokinetics, pharmacodynamics, pharmacogenomics, adverse effects, contraindications, drug interactions,(drug-drug, drug-food, drug-laboratory), convenience, cost, onset of action, formulations, stability and sterility; Compare and contrast the relevant available classes of erythropoiesis stimulating agents (epoetin-alfa, darbepoetin) used for the treatment of chemotherapy-induced anemia, based on the following criteria: indication, mechanism of action, efficacy, pharmacokinetics, pharmacodynamics, pharmacogenomics, adverse effects, contraindications, drug interactions,(drug-drug, drug-food, drug-laboratory), convenience, cost, onset of action, formulations, stability and sterility; Develop a therapeutic plan for the prevention and management of neutropenia and anemia associated with anticancer treatment.

- Malignant Hematology (didactic – 1.5 hr): Distinguish the difference between solid cancers and hematologic malignancies; Discuss the pathophysiology, epidemiology, clinical presentation, consequences, risk factors, natural history of common lymphomas, leukemias, and multiple myeloma; Outline the general principles of management and the role of surgery, radiation and/or chemotherapy for lymphomas, leukemias, and multiple myeloma

- Immune System Dysregulation, Disease and Therapy (didactic - 2 hr): Describe the function of the immune system; Discuss the various components of the immune system
  - Describe how tumors avoid immune system destruction
  - Describe the pharmacology of cancer-immunotherapies.

**Week 10**

**Lecture Topic:** Adverse effects of Targeted Agents; Transplant and Graft versus Host disease (didactic – 2 hr)
Lecture Learning Objectives:

- WORKSHOP 5 CYCLE: Adverse effects of Targeted Agents (online – 1 hr, group-based learning: 2 hr): Describe fundamental principles of targeted therapy of molecular targets and their development; Discuss the expanded role of targeted therapies in cancer and other diseases; Review pharmacology of monoclonal antibodies, small molecule inhibitors; Compare and contrast the toxicities that are common to cytotoxic agents compared to targeted therapy; Describe the mechanism of various adverse effects related to common classes of targeted therapies (e.g., vascular endothelial growth factor inhibitors, epithelial growth factor inhibitors, monoclonal antibodies), including epidemiology, clinical presentation, consequences (clinical impact) risk factors; Describe the clinical presentation (signs and symptoms, onset, duration), risk factors, complications and sequelae of EGFR inhibition; Outline the pharmacologic and (where applicable) non-pharmacologic prevention and management strategies of EGFR-related toxicities.

- Transplant and Graft versus Host disease (didactic – 2 hr): Review the HLA system and principles of donor selection; Differentiate between autologous and allogeneic HSCT and peripheral blood and bone-marrow transplant; Review the complications associated with autologous and allogeneic HSCT; Explain the immunological mechanisms and risk factors associated with rejection and GVHD; Describe the clinical presentation of rejection and GVHD and GVL; Discuss the goals of immunosuppression and the various immunosuppressive strategies utilized; compare and contrast the mechanisms, side effect profiles and drug interactions of the different immunosuppressants and anti-rejection agents; Describe the most common complications associated with immunosuppression and preventative strategies (if any); Recommend patient-specific drug therapy to reduce morbidity associated with immunosuppression-related complications.

Week 11
Lecture Topic: Adverse effects of Targeted Agents; Transplant and Graft versus Host disease (didactic – 2 hr)

Lecture Learning Objectives:

- WORKSHOP 5 CYCLE: Adverse effects of Targeted Agents (online – 1 hr, group-based learning: 2 hr): Describe fundamental principles of targeted therapy of molecular targets and their development; Discuss the expanded role of targeted therapies in cancer and other diseases; Review pharmacology of monoclonal antibodies, small molecule inhibitors; Compare and contrast the toxicities that are common to cytotoxic agents compared to targeted therapy; Describe the mechanism of various adverse effects related to common classes of targeted therapies (e.g., vascular endothelial growth factor inhibitors, epithelial growth factor inhibitors, monoclonal antibodies), including epidemiology, clinical presentation, consequences (clinical impact) risk factors; Describe the clinical presentation (signs and symptoms, onset, duration), risk factors, complications and sequelae of EGFR inhibition; Outline the pharmacologic and (where applicable) non-pharmacologic prevention and management strategies of EGFR-related toxicities.

- Transplant and Graft versus Host disease (didactic – 2 hr): Review the HLA system and principles of donor selection; Differentiate between autologous and allogeneic HSCT and peripheral blood and bone-marrow transplant; Review the complications associated with autologous and allogeneic HSCT; Explain the immunological mechanisms and risk factors associated with rejection and GVHD; Describe the clinical presentation of rejection and GVHD and GVL; Discuss the goals of immunosuppression and the various immunosuppressive strategies utilized; compare and contrast the mechanisms, side effect profiles and drug interactions of the different immunosuppressants and anti-rejection agents; Describe the most common complications associated with immunosuppression and preventative strategies (if any); Recommend patient-specific drug therapy to reduce morbidity associated with immunosuppression-related complications.
**Week 12**

**Lecture Topic:** Auto-immune Rheumatologic Disorders (didactic – 1 hr, 2 hr); Inflammatory Bowel Disease (didactic – 0.5 hr)

**Lecture Learning Objectives:**

- WORKSHOP 6 CYCLE: Auto-immune Rheumatologic Disorders (didactic – 1 hr, 2 hr): Differentiate between the musculoskeletal autoimmune diseases: lupus, spondylitis (axial spondyloarthritis, or axial SpA), and rheumatoid arthritis based on clinical presentation and diagnostic workup; Discuss the pathophysiology, epidemiology, clinical presentation, risk factors, natural history of rheumatoid arthritis; Describe how Rheumatoid Arthritis (RA) is diagnosed, the role of diagnostic tests, and differential diagnosis for RA; Compare and contrast the relevant available classes and agents for the treatment of rheumatoid arthritis based on the following criteria: indication, mechanism of action, efficacy, pharmacokinetics, pharmacodynamics, pharmacogenomics, adverse effects, contraindications, drug interactions,(drug-drug, drug-food, drug-laboratory), convenience, cost, onset of action, formulations, stability and sterility; Develop a therapeutic plan for the management of rheumatoid arthritis.

- Inflammatory Bowel Disease (didactic – 0.5 hr): Discuss the pathophysiology, epidemiology, clinical presentation, risk factors, drugs that may cause/exacerbate, natural history, diagnosis and differential diagnosis for the following conditions: inflammatory bowel disease; Identify the appropriate (laboratory, clinical biochemistry, pathology, histology, medical imaging) findings use in the diagnosis and on-going monitoring of inflammatory bowel disease; Compare and contrast the relevant pharmacological and nonpharmacological treatment options used for the treatment of inflammatory bowel disease, including 5-ASA, corticosteroids, immunosuppressants, antibiotics, and tumor necrosis factor antagonists, based on the following criteria: indications, mechanism of action, pharmacokinetics, pharmacodynamics, adverse effects, contraindications, drug interactions (drug-drug, drug-food, drug-laboratory), convenience, cost, onset of action, formulations, stability, and with special attention to geriatrics; Describe the non-pharmacologic management for the selected condition.

**Week 13**

**Lecture Topic:** Auto-immune Rheumatologic Disorders (didactic – 1 hr, 2 hr); Inflammatory Bowel Disease (didactic – 0.5 hr)

**Lecture Learning Objectives:**

- WORKSHOP 6 CYCLE: Auto-immune Rheumatologic Disorders (didactic – 1 hr, 2 hr): Differentiate between the musculoskeletal autoimmune diseases: lupus, spondylitis (axial spondyloarthritis, or axial SpA), and rheumatoid arthritis based on clinical presentation and diagnostic workup; Discuss the pathophysiology, epidemiology, clinical presentation, risk factors, natural history of rheumatoid arthritis; Describe how Rheumatoid Arthritis (RA) is diagnosed, the role of diagnostic tests, and differential diagnosis for RA; Compare and contrast the relevant available classes and agents for the treatment of rheumatoid arthritis based on the following criteria: indication, mechanism of action, efficacy, pharmacokinetics, pharmacodynamics, pharmacogenomics, adverse effects, contraindications, drug interactions,(drug-drug, drug-food, drug-laboratory), convenience, cost, onset of action, formulations, stability and sterility; Develop a therapeutic plan for the management of rheumatoid arthritis.

- Inflammatory Bowel Disease (didactic – 0.5 hr): Discuss the pathophysiology, epidemiology, clinical presentation, risk factors, drugs that may cause/exacerbate, natural history, diagnosis and differential diagnosis for the following conditions: inflammatory bowel disease; Identify the appropriate (laboratory, clinical biochemistry, pathology, histology, medical imaging) findings use in the diagnosis and on-going monitoring of inflammatory bowel disease; Compare and contrast the relevant pharmacological and nonpharmacological treatment options used for the treatment of inflammatory bowel disease, including 5-ASA, corticosteroids, immunosuppressants, antibiotics, and tumor necrosis factor antagonists, based on the following criteria: indications, mechanism of action, pharmacokinetics, pharmacodynamics,
adverse effects, contraindications, drug interactions (drug-drug, drug-food, drug-laboratory),
convenience, cost, onset of action, formulations, stability, and with special attention to geriatrics;
Describe the non-pharmacologic management for the selected condition

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>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Assignment</td>
<td></td>
<td>Workshop rubric to assess knowledge, understanding and participation</td>
<td>12 % (2.25% for 4 LOs answered throughout the year = 9% PLUS 0.5% for workshop participation x 6)</td>
<td></td>
</tr>
<tr>
<td>☐ Assignment</td>
<td></td>
<td>Individual Assignments</td>
<td>12 % (2 x 6%)</td>
<td></td>
</tr>
<tr>
<td>☐ Assignment</td>
<td></td>
<td>Multiple choice questions</td>
<td>38 %</td>
<td></td>
</tr>
<tr>
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<td></td>
<td>Multiple choice questions</td>
<td>38 %</td>
<td></td>
</tr>
</tbody>
</table>

Expectation for pass grades for all Pharmacy courses is 60%

9. Policy and procedure regarding late assignments/examinations/laboratories:

Missed Exam/Test Policy: Students who miss an examination or a test and who have a valid petition filed with the Registrar’s office will be eligible to complete a make-up examination or test. The format of this examination or test will be at the discretion of the course coordinator, and may include, for example, an oral examination.

Missed Tutorial/Small group session Policy: Students who miss a scheduled tutorial/small group session and who have a valid petition filed with the Registrar’s office will be eligible to:
   a. Attend a subsequent regularly scheduled small group session/tutorial (if space is available)
   b. Complete assignment
*Note: this applies only for laboratories or tutorials where summative assessment occurs

Missed Assignment Policy: Students who fail to submit an assignment by the specified due date, and who have a valid petition filed with the Registrar’s office will be eligible to submit the completed assignment, or an alternative assignment based on course requirements, with no academic penalty.

10. Policy and procedure regarding missed assignments/examinations/laboratories:
Students who fail to submit an assignment by the specified due date will receive a deduction of 10% for each day beyond the due date (including/excluding weekends/holidays), to a maximum of 50%. Assignments will not be accepted for grading after 5 late days.

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.