Course Outline and Syllabus

Name: Amita Woods and Lalitha Raman-Wilms

Course Number: PHM101H1

Course Title: General Medicine I

Course Description: Introduction and Selected Topics in Pharmacotherapy is one of a series of courses taught over three years of the program which will provide the required knowledge and skills to effectively manage patients’ drug therapy. In addition to covering selected therapeutic topics, the course will integrate relevant pathophysiology, pharmacology, clinical pharmacokinetics, selected pharmaceutics and principles of evidence-based pharmacotherapy. Principles of drug therapy in geriatrics, pediatrics and other special populations will be addressed. Various learning and teaching methodologies will be used including didactic teaching, small group case discussions, and in-depth discussions of cases in small groups. This course will help students prepare for the Medication Therapy Management Course and the other Pharmacotherapy courses.

Required: Yes

Elective: no

1. Course Learning Objectives:

Upon completion of this course, students will be able to have:

**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:**

a) Describe the various laboratory parameters relevant to normal physiology, as well as selected medical conditions, which are important in the evaluation and monitoring of drug therapy.

b) Explain the impact of age-related changes in renal and hepatic function, body composition, and Central Nervous System sensitivity on drug selection and dose

c) Identify medications, including anticholinergic, psychoactive, anticoagulant, analgesic, hypoglycemic, and cardiovascular drugs that should be avoided or used with caution in older adults and explain the potential problems associated with each.

d) Apply knowledge of the biological, physical, cognitive, psychological, and social changes commonly associated with aging.

e) Assess specific medication related risks and barriers to older adult safety, including falls and other risks in community, home, and care environments.

f) Describe the mechanism of selected drug-induced disorders (hepatotoxicity).

g) Describe the role of other health professionals in the management of selected medical conditions.
h) List commonly used resources and sources of evidence for drug therapy management in selected therapeutic conditions.

**Intermediate Level:**

a) Recognize the principles and practices of safe, appropriate, and effective medication use in older adults.

b) Describe the pathophysiology of selected disease states or syndromes (osteoarthritis, gout, COPD, asthma, dyspepsia) including the epidemiology, natural history, and risk factors.

c) Identify the appropriate biochemical markers and/or radiographic studies used in the diagnosis of selected conditions and be able to interpret them (such things as joint involvement in OA, Bone Scan results and Osteoporosis).

d) Describe the effectiveness, safety, and convenience of pharmacotherapies utilized to manage selected medical conditions.

e) Contrast criteria used in clinical trials to compare effectiveness of selected therapies.

f) Compare and contrast the delivery systems/formulations that influence the selection of therapy (patches, creams, gels, oral, local injections, daily, weekly, monthly, yearly).

g) Given a patient scenario be able to identify common, non complex drug therapy problems in selected therapeutic conditions.

**Advanced Level:**

a) Assess the effectiveness, safety and convenience of complementary/herbal therapies related to selected therapeutic topics.

b) Select appropriate parameters to assess effectiveness and safety when monitoring therapy for selected therapeutic areas.

c) Explain and support the choice of therapeutic options for a simulated patient related to selected therapeutic areas.

**Skills**

**Introductory Level:**

a) Design a monitoring plan for a selected therapeutic regimen including physiological and biochemistry parameters.

**Intermediate Level:**

a) Use a systematic process to select and defend effective therapeutic options for a given patient.

**Advanced Level:**

**Attitudes/Values**

**Introductory Level:**

a) *Students develop a sense of responsibility to manage a patient's medication related needs*
b). The student will undertake assessment and care plan development activities in a manner respecting patient autonomy and the individual therapeutic goals.

c. The student will use interprofessional patient centered care principles to reach decisions for therapeutic alternatives.

Intermediate Level:

Advanced Level:

2. Rationale for Inclusion in the Curriculum:
The Pharmacotherapy courses will prepare students for direct patient care practice by enabling them to gain the required knowledge and skills related to therapeutics. Information learned in this course will be applied further in the Medication Therapy Management courses and during Experiential education. In this course, students will be required to integrate knowledge learned in previous and concurrent courses including, anatomy, physiology, pathobiology and pathophysiology, pharmaceutics, pharmacology, pharmacokinetics, Informatics and Clinical Trials, and incorporate new pharmacotherapeutic information, in order to identify and resolve drug therapy problems in simulated patient cases.

Through discussion in small groups and within the large class, students will acquire and reinforce their knowledge of therapeutics and skills in assessing patient’s medical conditions and medications in order to identify and resolve patients’ drug therapy problems. Teaching will occur through large class didactic sessions, small group seminars, self-directed on-line learning and patient case discussions in groups of 60.

Selected readings will be included with each patient case; however, students are encouraged to explore additional literature in working through the ‘problem’ case. Although students are required to develop their own learning objectives, general learning objectives for each therapeutic area will be provided.

Therapeutic areas covered in this course include familiarity and utilization of laboratory values for diagnosing and managing various conditions, assessment and management of adverse drug reactions and drug allergies, principles of drug therapy in special populations including pediatrics, geriatrics and pregnancy, and will include topics related to gastrointestinal, musculoskeletal, respiratory diseases and others.

3. Pre-requisites:
(Link to relevant course outlines)
Specify relevant knowledge or skills that are pre-requisite areas of emphasis
Pharmacokinetics

Anatomy and Physiology

Pathophysiology

Pharmacy Informatics and Biostatistics

Biochemistry

IPE Core Course Session
4. Statement of agreement from course coordinators of courses for which your course is a pre-requisite:
Coordinator’s Name and course name and/or number:

5. Co-requisites: (for the current and subsequent year)
(Link to relevant course outlines)
Specify relevant knowledge or skills that are co-requisite areas of emphasis
Pharmacokinetics
Pathophysiology
Pharmaceutics
Pharmacology
Health Systems I
Social and Behavioural Health
Medication Therapy Management 1

6. Statement of agreement from course coordinators of courses for which your course is a co-requisite:
Coordinator’s Name and course name and/or number:

7. Course Contact Hours and Teaching Methodologies:

<table>
<thead>
<tr>
<th>Didactic (lecture)</th>
<th>20 hours</th>
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<tbody>
<tr>
<td>Large group problem-based or case-based learning</td>
<td>10 hours</td>
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<tr>
<td>Large Group Size</td>
<td>60 persons</td>
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<tr>
<td>Laboratory or Simulation</td>
<td>hours</td>
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<tr>
<td>Tutorial/Seminar/Workshop/Small Group</td>
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<tr>
<td>On-line</td>
<td>6 hours</td>
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<tr>
<td>Other (please specify)*</td>
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* Other specific information: **On-Line hours will include mini lectures, discussion boards, self assessment cases**

Total course contact hours: 39 hours

8. Estimate and description of student’s out-of-class preparation time required:
In terms of preparation time, the range will be 3-25 hours per week. The earlier introductory weeks will have fewer preparation hours. The case study seminar in week 8 will require much more out of class preparation time in the range of 25 hours.

In preparation for class, students will be expected to read any assigned readings, review online presentations when available, participate in discussion boards when available, and work up the cases when they are given in advance of the class session. Students will also be expected to have reviewed any relevant materials from pre or co-requisite courses.
9. Course Coordinator (including contact information):

**LALITHA RAMAN-WILMS, Pharm.D., FCSHP**  Tel:(416) 978-0616, Fax: (416) 978-8511 Room: PB 704  Email: l.raman.wilms.a@utoronto.ca

10. Course Instructors (including contact information):

11. Required Resources/Textbooks/Readings:

Assigned readings as identified by topic lecturer

Drugs in Pregnancy and Lactation - available online

Various other pediatric and geriatric resources including websites

12. Recommended Resources/Textbooks/Readings:
Koda-Kimble MA and Young LY, et al. (eds), Applied Therapeutics: The Clinical Use of Drugs, 9th ed. Lippincott Williams & Wilkins, Baltimore, MD, 2009. or 10th edition is being release February 2012

13. Topic Outline/Schedule:

**Week 1**

**Topic/Lesson Objectives:** Introduction: Orientation to course and to "therapeutics"

Review PCT modules in general, outline how they progress over the years

Be able to describe the concept of depth of knowledge, and recognize that some content will be covered at an introductory level, while others will be at an advanced level

Review teaching methodology didactic, PBL, online

Review assessment methods

Discuss PCT
- what it is
- how courses tie together
- topics and how they bring in the information
- self directed nature, learning skills that will allow them to teach themselves topics that are not covered

Introduce some concepts around medication therapy

i.e. can not swallow what does that mean,
ie pt states allergy is it a true allergy,

ie pt not taking a medication what do you do

**Preparation/Readings:**
**Pre-requisite/Co-requisite knowledge and skills:**

**Week 2**
**Topic/Lesson Objectives:** Utilizing Laboratory Values in Therapeutics:

**Knowledge:** ADV

**Skills:** INTER

**Attitude:** INTER

a) Describe the anatomy and physiology of the liver and the kidney,

b) Describe the basic pathophysiology of the hematopoietic system focusing on RBC

c) For the various laboratory tests discussed explain clinical use, how it relates to the pathophysiology of the disease, how to interpret lab test results, and causes for abnormal results

d) Describe the advantages, assumptions and limitations of various methods used to estimate glomerular filtration rate (Cockcroft-Gault, MDRD, inulin, 24 hour urine collection).

e) Integrate laboratory values into the medication therapy management of patients using Anemia as an example

6. Summarize the general management of hyper/hyponatremia, hyper/hypokalemia, hyper/hypomagnesemia, hyper/hypochloremia, and acidosis/alkalosis.

**Preparation/Readings:** as per the instructor for the session, likely textbook chapters, articles, online resources

**Pre-requisite/Co-requisite knowledge and skills:** Anatomy: focus on liver and kidney

Pathophysiology: Need to describe normal func and abnormal function of organs with a focus on kidney and liver

(refer to hepatic patho currently taught by Bill Bartle and Hoffman)

Need to describe the hematopoietic system with a focus on RBC

Chemistry: review of acid/base

Pharmacology: vitamin B12, folate, B6, iron preparations - comparing the various salts and how the salt affects availability and absorption

**Week 3**
**Topic/Lesson Objectives:** Adverse Drug Reactions and Drug Allergies
Knowledge and Skills:

a) Describe basic immunology in order to understand allergic drug reactions

b) Describe the mechanism of drug-induced

a. liver disease, specifically NSAID, acetaminophen and alcohol-induced liver disease.

b. Kidney disease

c. Hematologic (ie agranulocytosis from clozapine)

d. Skin diseases

c) Identify the impact of pharmacogenetics on adverse drug reactions, and its role in developing predictive tests

d) Describe the effect of liver disease on the bioavailability, metabolism and elimination of drugs

e) Demonstrate an understanding of dosing adjustments in hepatic disease.

f) Identify a general approach to assessing a patient with a potential ADR

Attitudes:

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.

Preparation/Readings: as per the instructor for the session, likely textbook chapters, articles (guidelines, review articles, practice statements), online resources

Pre-requisite/Co-requisite knowledge and skills: Immunology to better understand allergies

Week 4
Topic/Lesson Objectives: Geriatrics Overview

K: INTRO

S: INTRO

A: INTER
Knowledge and Skills:

a) Utilize a general approach to seniors care. Incorporating an approach to information gathering, problem solving (be sure to consider drug related cause of symptoms), establishing targets or goals of therapy and monitoring the outcomes.

b) Contrast the pharmacokinetics (absorption, distribution, metabolism, elimination) pharmacodynamics, and physiological changes in an aging population with that of a young healthy individual.

c) Identify the common conditions/indications for therapy that seniors need to be screened for including delirium, dementia, depression, falls, vaccinations.

d) Justify the age related selection of a preferred alternative (drug and dose) for a given therapeutic scenario based on the changes in PK, PD and drug sensitivity.

e) Identify medications including anticholinergic, psychoactive, anticoagulant, hypoglycemic, analgesic, and cardiovascular drug that should be used with caution or avoided in older adults.

f) Explain the problems associated with the drugs in (e).

g) Develop a care plan with follow up for a given simple clinical situation.

h) Justify the proposed interventions of the care plan to meet the stated goals of therapy.

Attitudes:

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.

Preparation/Readings: as per the instructor for the session, likely textbook chapters, articles (guidelines, review articles, practice statements), online resources.

Pre-requisite/Co-requisite knowledge and skills: Kinetics of drugs inc absorption, distribution, metabolism and elimination - comparison between how they occur in young adults and the changes that occur as one ages, discuss drug sensitivities that can occur as one ages.

Pathphy: changes in liver and renal function, fat: muscle ratios,

Anatomy: changes that occur in the elderly, fat distribution, protein changes,

Social: ageism, concept of ADLs, coverage issues/available programs (ie ODB plan), complex care, Long term care facilities,

Communication Skills: how to deal with hearing, vision deficits, group interviewing skills (patient and care givers), Keeping patients focused, relevant questioning.

Week 5
Topic/Lesson Objectives: Pediatric principles.
Knowledge and Skills:

a) Utilize a general approach to pediatric care. Incorporating an approach to information gathering (often from third party, weight required) problem solving, establishing targets or goals of therapy and monitoring the outcomes.

b) Contrast the pharmacokinetics (absorption, distribution, metabolism, elimination) pharmacodynamics, and physiological maturity with that of a healthy adult. Be aware that neonate, infants, children and adolescents will differ.

c) Differentiate potential drug delivery systems or formulations of drugs used in pediatrics in selecting the most appropriate product for the management of a pediatric patient (e.g. suspensions, solutions, injections, popsicles, enemas and suppositories). (K)

d) Justify the age related selection of a preferred alternative (drug and dose) for a given therapeutic scenario based on the parameters noted in (b) as well as safety.

e) Utilize weight based dosing,

f) Describe pediatric vaccination principles (include volumes of single IM injections), schedules, and alternatives for pain management.

g) Develop a care plan with follow up for a given clinical situation. (S)

h) Justify the proposed interventions of the care plan to meet the stated goals of therapy. (S)

Attitude

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.

Preparation/Readings: as per the instructor for the session, likely textbook chapters, articles (guidelines, review articles, practice statements), online resources

Pre-requisite/Co-requisite knowledge and skills: Kinetics: contrast with young adults, maturation of organ systems, difference between neonate, ped, adolescents, PK/ PD differences

Calculations: mg/ kg dosing, concentrations of solutions,

Communications: group interviewing, asking the right focused questions, engaging/ involving children when age appropriate.
Pharmaceutics: formulations (inj, enemas, solutions, suppositories), dissolution, stability, storage,

**Week 6**

**Topic/Lesson Objectives:** Pregnancy and Lactation:

**K: INTRO**

**S: INTRO**

**A: INTER**

**Knowledge and Skills:**

a) Utilize a general approach to the care of a patient who is pregnant or lactating. Incorporating an approach to information gathering, problem solving (utilizing appropriate references, and evidence), establishing targets or goals of therapy and monitoring the outcomes

b) Discuss the changes in pharmacokinetics (absorption, distribution, metabolism, elimination), pharmacodynamics, and drug transport across the placenta

c) Justify the selection of a preferred alternative (drug and dose) for a given therapeutic scenario based on the benefits to the woman (consider trimester of pregnancy) and the possible risk to the fetus or baby.

d) Explain the rationale for the use of vitamins during pregnancy and lactation

e) Develop a care plan with follow up for a given clinical situation.

f) Justify the proposed interventions of the care plan to meet the stated goals of therapy.

**Attitudes:**

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.

**Preparation/Readings:** as per the instructor for the session, likely textbook chapters, articles (guidelines, review articles, practice statements), online resources

**Pre-requisite/Co-requisite knowledge and skills:** Kinetics: PK/ PD issues in pregnancy and lactation, drug transport across placenta,

Anatomy/ physiology: changes in pregnancy, fetal development to help understand when the risk associated with various drugs is highest

HPA axis since we are going to discuss thyroid function

Pharmacology: classification system for fetal risk
Week 7
Topic/Lesson Objectives: Constipation:

K: ADV
S: INT
A: INTER

a) Discuss the etiology, pathophysiology, epidemiology, clinical presentation, risk factors and natural history for constipation.

b) Identify the appropriate (laboratory, clinical biochemistry) findings related to the diagnosis.

c) Compare and contrast the relevant (available, investigational, complementary and alternative and emerging) classes of agents used for the therapeutic condition based on the following criteria: indications, mechanism of action, mechanism of resistance, pharmacokinetics, pharmacodynamics, pharmacogenomics, adverse effects, contraindications, drug interactions (drug-drug, drug-food, drug-laboratory), convenience, cost, availability, onset of action, formulations, stability, sterility.

d) Justify the selection of a preferred alternative for a given therapeutic scenario based on assessment of relevant therapeutic alternatives.

e) Demonstrate the use of a framework for assessing a patient with a GI disorder to determine the most appropriate drug therapy including complementary drugs.

f) Develop a care plan with follow up for a given clinical situation.

g) Justify the proposed interventions of the care plan to meet the stated goals of therapy.

h) Evaluate the quality, accuracy, and completeness of the care plan (own and peer).

i) Select relevant data from; review of systems, laboratory tests, medical imaging,

j) Apply relevant findings from: ROS, laboratory tests, medical imaging to determine actual and potential drug therapy needs.

k) Recommend appropriate therapeutic care plans to manage drug therapy problems in patients with constipation

Preparation/Readings: as per the instructor for the session, likely textbook chapters, articles (guidelines, review articles, practice statements), online resources

Pre-requisite/Co-requisite knowledge and skills: Patho: Describe what constipation is and severity

Pharmaceutics: enemas, suppos,

Pharmacology: laxatives

Week 8
Topic/Lesson Objectives: Asthma and COPD
Knowledge:

A. Describe the pathophysiology, clinical presentation, epidemiology, natural history, of selected respiratory diseases (COPD, asthma).

B. Define the most common risk factors of the selected respiratory diseases (COPD, asthma)

C. List and outline the main diagnostic role of the appropriate pulmonary function tests and biochemistry markers utilized in diagnosing asthma and COPD

D. Describe the mechanism of action, pharmacokinetic parameters, onset of action, adverse effects, drug interactions and dosage forms of medications used in the treatment of respiratory diseases (e.g. xanthines, sympathomimetics, anticholinergics, corticosteroids, leukotriene receptor agonists)

E. Describe the advantages and disadvantages of inhaled vs. systemic drug therapy for selected medications (corticosteroids and beta-agonists)

F. Summarize and define the role of selected non-pharmacological therapies and supportive care for COPD and asthma.

G. Describe the therapeutic approach to care in managing patients' acute COPD exacerbations.

H. Describe the therapeutic approach to care for maintenance therapy for COPD patients.

I. Describe the therapeutic approach to care in managing patients' acute asthma exacerbations.

J. Describe the therapeutic approach to care for maintenance therapy for asthma patients.

K. Outline the therapeutic approach to care for preventative therapy of selected respiratory diseases (COPD, asthma) including role of vaccinations, smoking cessation, risk factor modification, trigger avoidance.

L. List common drugs/ and or chemicals that can induce asthma and outline the mechanism of action of drugs/ and or chemicals which can induce asthma?

M. To summarize the role of antibiotic therapy for patients with an acute exacerbation of COPD

Skills:

a) Recognize and describe the various stages of the severity of Asthma and COPD in patients based on patient signs and symptoms.

b) Identify the appropriate resources and sources (evidence) for drug therapy management to justify the selection of a therapeutic regimen for COPD and Asthma based on the severity of disease.
c) Select an appropriate regimen by comparing and contrasting the advantages and disadvantages of specific drug formulations for managing patients with respiratory diseases.

d) Recognize clinically significant drug-drug interactions for medications of selected respiratory diseases and recommend appropriate therapeutic management plans.

e) Identify common drug therapy problems in patients with COPD, and asthma.

f) Recommend appropriate therapeutic care plans to manage drug therapy problems in patients with COPD and asthma.

Attitudes:

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 co-operativity in team functioning.

Preparation/Readings: as per the instructor for the session, likely textbook chapters, articles (guidelines, review articles, practice statements), online resources

Pre-requisite/Co-requisite knowledge and skills: Pharmacology: respiratory drugs, plus inhaled CCS, and oral CCS

Pathophysiology of resp tract, monitoring of resp function (spirometry)

Week 9
Topic/Lesson Objectives: GI

K:INTER

S: INTER

A: INTER

a) Discuss, for the following diseases or therapeutic conditions (dyspepsia, peptic ulcer disease, drug-induced liver disease) the etiology, pathophysiology, epidemiology, clinical presentation, risk factors and natural history.

b) Identify the appropriate (laboratory, clinical biochemistry, pathology, histology, microbiology, medical imaging) findings in order to relate the clinical findings to the diagnosis.

c) Compare and contrast the relevant (available, investigational, complementary and alternative and emerging) classes of agents used for the selected diseases or therapeutic conditions based on the following criteria: indications, mechanism of action, mechanism of resistance, pharmacokinetics, pharmacodynamics, pharmacogenomics, adverse effects, contraindications, drug interactions (drug-drug, drug-food, drug-laboratory), convenience, cost, availability, onset of action, formulations, stability, sterility.
Preparation/Readings: as per the instructor for the session, likely textbook chapters, articles (guidelines, review articles, practice statements), online resources

Pre-requisite/Co-requisite knowledge and skills: Pharmacology: Gastric Acid lowering drugs, misoprostil, sucralfate, antibiotics for H. pylori

Anatomy: General overview of GI system

Pathophysiology of GERD, PUD

Pharmaceutics: Tablets vs capsule, dissolution, various coatings and how they affect availability for absorption

Week 10
Topic/Lesson Objectives: Osteoporosis

K: ADV
S: INTER
A: ADV

a) Describe the pathophysiology of selected disease states or syndromes (osteoporosis) including the epidemiology, natural history, and risk factors.

b) Describe the mechanism of drug (prednisone) induced disorders such as osteoporosis and how to manage them.

d) Identify the appropriate biochemical markers (erythrocyte sedimentation rate, C-reactive protein, Immunoglobulin levels, antinuclear antibodies) and/or radiographic studies (x-rays, bone mineral density tests, bone scans) used in the diagnosis of these conditions and be able to interpret them (Bone Scan results and Osteoporosis).

e) Compare and contrast the relevant (available, investigational, complementary and alternative and emerging) classes of agents used for the selected diseases or therapeutic conditions (osteoporosis) based on the following criteria:


h) List commonly used resources and sources of evidence for drug therapy management of osteoporosis.

Skills:

i) Compare and contrast the delivery systems/formulations that influence the selection of therapy (patches, creams, gels, oral, local injections, daily, weekly, monthly, yearly).

j) Given a patient scenario be able to identify common, non complex drug therapy problems in osteoporosis.

k) Develop a care plan with follow up for a given clinical situation.

l) Justify the selection of a preferred alternative for a given therapeutic scenario based on assessment of relevant therapeutic alternatives.

m) Design a monitoring plan for a selected therapeutic regimen in order to assess efficacy including physiological and biochemistry parameters.

Attitudes:

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.
Preparation/Readings: as per the instructor for the session, likely textbook chapters, articles (guidelines, review articles, practice statements), online resources

Pre-requisite/Co-requisite knowledge and skills: Pharmacology: drugs that affect bone metabolism, calcium, vitamin D,

Pathophysiology: disorders of calcium metabolism,

Anatomy of the bone

Physiology of bone regulation

Pharmaceutics: daily, once weekly, monthly and yearly formulations

Week 11
Topic/Lesson Objectives: Pain, Gout OA

K: INTRO

S: INTRO

A: INTRO

a) Describe the pathophysiology of selected disease states or syndromes (osteoarthritis, gout) including the epidemiology, natural history, and risk factors.

b) Describe in basic terms the pathophysiology of pain

c) Identify the appropriate biochemical markers (erythrocyte sedimentation rate, C-reactive protein, Immunoglobulin levels, antinuclear antibodies) and/or radiographic studies (x-rays, bone mineral density tests, bone scans) used in the diagnosis of these conditions and be able to interpret them

d) Compare and contrast the relevant (available, investigational, complementary and alternative and emerging) classes of agents used for the selected diseases or therapeutic conditions (osteoarthritis, gout) based on the following criteria:

indications, mechanism of action, pharmacokinetics, adverse effects, contraindications, drug interactions (drug-drug, drug-food, drug-laboratory), convenience, cost, onset of action, formulations, stability, sterility.

e) Compare and contrast the relevant classes of agents used for the treatment of pain related to MSK disorders based on the following criteria: Also be able to apply these principles to other pain conditions such as headaches

indications, mechanism of action, pharmacokinetics, adverse effects, contraindications, drug interactions (drug-drug, drug-food, drug-laboratory), convenience, cost, onset of action, formulations

f) Describe the role of other therapies such as joint replacement, physiotherapy, occupational therapy, acupuncture

g) List commonly used resources and sources of evidence for drug therapy management in the above MSK conditions
Skills:

i) Compare and contrast the delivery systems/formulations that influence the selection of therapy (patches, creams, gels, oral, local injections, daily, weekly, monthly, yearly)

j) Given a patient scenario be able to identify common, non complex drug therapy problems in the above MSK conditions

k) Develop a care plan with follow up for a given clinical situation.

l) Justify the selection of a preferred alternative for a given therapeutic scenario based on assessment of relevant therapeutic alternatives.

m) Design a monitoring plan for a selected therapeutic regimen in order to assess efficacy including physiological and biochemistry parameters

Attitudes:

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.

Preparation/Readings: as per the instructor for the session, likely textbook chapters, articles (guidelines, review articles, practice statements), online resources

Pre-requisite/Co-requisite knowledge and skills: Pharmacology: Acetaminophen, NSAIDs, COx 2 inhibitors, uricosuric agents

Patho: general pain patho, urate metabolism, gout, discuss osteoarthritic and mention that there are other arthritic conditions that we will not be covering here

Pharmaceutics: Intraarticular injections

Week 12

Topic/Lesson Objectives: Depression

K: INTER

S: INTRO

A: INTRO

Knowledge and Skills:

The student will be able to:

a) For depression recognize the clinical features used for the diagnosis and ongoing monitoring

b) Evaluate vitamins and complementary medicines
c) List the classes of medication used in the treatment of depression

d) Use an Evidence Based Medicine approach to evaluate the efficacy of St John’s wort for the treatment of depression.

Attitudes:

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.

Preparation/Readings: as per the instructor for the session, likely textbook chapters, articles (guidelines, review articles, practice statements), online resources

Pre-requisite/Co-requisite knowledge and skills: Pharmacology: introduction to the classes of agents, will be discussing in more detail in later PCT module

Vitamins and Herbal overview

EBM: need to know how to do an evidence based review of therapy, and be able to make a recommendation based on the review.

Pharmacy Informatics: need to be able to conduct a literature search

Week 13
Topic/Lesson Objectives: Course and Exam Review
Preparation/Readings:
Pre-requisite/Co-requisite knowledge and skills:

14. Assessment Methodologies Used:

<table>
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<tr>
<th>Learning Objective Addressed</th>
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<tbody>
<tr>
<td>Assessment 1: Midterm Examination: covering Knowledge and Skills objectives from weeks 1-6 inclusive</td>
</tr>
<tr>
<td>Assessment 2: Covering Objectives from Weeks 7-12</td>
</tr>
<tr>
<td>Assessment 3: Learning objectives for week 8 Asthma and COPD</td>
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<tr>
<td>Assessment 4: Week 7 and week 10 objectives</td>
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</tbody>
</table>

Assessment Method Used

Assessment 1: MCQ examination that includes case based questions
### Assessment 2: MCQ examination (inc case based questions) possibly short answer questions

### Assessment 3: Facilitators assess students based on their performance in three categories: knowledge, application of knowledge and communication skills

### Assessment 4: Online case evaluation TBD

#### When Administered

- **Assessment 1:** After week 6
- **Assessment 2:** After week 13, final exam period
- **Assessment 3:** During week 8
- **Assessment 4:** During week 7 and week 10

#### Percentage of Course Grade

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<tr>
<th>Assessment</th>
<th>Percentage</th>
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<tr>
<td>1</td>
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<td>10</td>
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<tr>
<td>4</td>
<td>5% each, total 10%</td>
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#### For Group Work (maximum 10% of course grade) indicate how marks within groups are allocated: Individualized or Same for all Group Members

<table>
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<tr>
<th>Assessment</th>
<th>Mark Distribution</th>
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<td>2</td>
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<tr>
<td>3</td>
<td>Students will each receive an individual grade</td>
</tr>
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</tbody>
</table>

#### Remediation Opportunities?

- **Assessment 1:** If critical reasoning issues are identified students will be referred to Critical Reasoning Stream coordinator

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Remediation</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>If critical reasoning issues are identified students will be referred to Critical Reasoning Stream coordinator</td>
</tr>
<tr>
<td>2</td>
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<td>3</td>
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</table>

*Expectation for pass grades for all Pharmacy courses is 60%.*
15. Policy and procedure regarding make-up assignments/examinations/laboratories:
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.

16. Policy and procedure regarding supplemental assignments/examinations/laboratories:
Students who miss a case study seminar, online evaluation, self-assessment and who have a valid petition filed with the Registrar’s office will be eligible to complete a make-up CSS, or assignment. The format of this will be at the discretion of the course coordinator, and may include, for example, the make up CSS may be a one on one session with the coordinator or a group assessment. The self assessment could be in a different topic area than the original assignment. Online evaluation could be replaced by an oral assessment.