

A brief Course Description

Course Name	Integrated pharmacotherapy (5)		
Course Code	CPP 426		
College	College of Pharmacy		
Department/ Program	Doctor of Pharmacy (Pharm D)		
Year / Level:	9th Level / 5th Year		
Credit Hours	5		
Contact Hours	Lecture: 5	Lab/Tutorial: -----	Training: -----
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	CPP 423M, CPP 424M		
Co-Requests:	CPP 427, CPP 443		
Course Objectives:	<p>Prepares students to assess and manage the pharmacotherapy of complex cardiac diseases and disorders, anemia, arthritis, and rheumatic fever. Focuses on solving problems that require application of the pharmacology and medicinal chemistry of drugs affecting cardiac function, red blood cell function, and inflammatory disease. Uses a case – based and problem – based learning format to develop the student's ability to be a self – directed learner.</p> <p>1. Solve a problem or case by applying knowledge about the pharmacology and medicinal chemistry of the following drug classes:</p> <p>A. Digoxin.</p>		

- B. Nitrates.
- C. Beta – blockers.
- D. Central acting agents.
- E. Antiarrhythmics – Classes I, II, III, and IV.
- F. Iron, Vitamin B12 and Erythropoietin.
- G. Salicylates & Oxicams.
- H. DMARDS: Antimalarials, gold, methotrexate.
- I. Biological therapy: Non-Anti –TNF: (Abatacept, 2. Rituximab, 3. Tocilizumab.), Anti-TNF: Adalimumab, Etanercept, Infliximab, Certolizumab).

2. Recommend appropriate pharmacotherapy for patients with the following cardiac disorders/ diseases:

- A. CHF.
- B. Angina.
- C. Acute coronary syndrome.
- D. Atrial and ventricular arrhythmias.
- E. Rheumatoid arthritis.
- F. Osteoarthritis.
- G. Anemias (iron deficiency, B12 deficiency, chronic anemias).
- H. Sickle Cell Disease.
- I. Arrhythmias.
- J. Anemias.

3. For a patient with each of the above diseases/ diseases/ disorders, accomplish the following:

- A. Develop a patient – centered focus and responsibility.
- B. perform systematic medication profile reviews.
- C. Identify issues (potential and actual drug – related problems) associated with the patient's drug therapy.
- D. Use a variety of resources, such as patient information, reference materials, health care professionals (nurses, physicians, others), and medical chart information to work up a patient.
- E. Establish the desired therapeutic outcomes for a patient.
- F. Identify therapeutic alternatives for a patient.
- G. Develop a written care plan and verbally communicate the plan to the provider.

A brief Course Description

Course Name	Integrated pharmacotherapy (6)		
Course Code	CPP 427		
College	College of Pharmacy		
Department/ Program	Doctor of Pharmacy (Pharm D)		
Year / Level:	9th Level / 5th Year		
Credit Hours	5		
Contact Hours	Lecture: 5	Lab/Tutorial: -----	Training: -----
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	CPP 423M, CPP 424M		
Co-Requests:	CPP 426, CPP 443		
Course Objectives:	1. Solve a case or problem by applying knowledge about the pharmacology and medicinal chemistry of the following drug classes: <ul style="list-style-type: none"> A. Anticonvulsants. B. Antianxiety agents. C. Hypnotics. D. Antidepressants. E. Antipsychotics. F. Parathyroid hormone, bisphosphonates, Mixed estrogen agonists/antagonists, and teriparatide. G. Cholinesterase inhibitors and antiglutamatergics. 		

- H. Dopamine receptor theory and dopaminergic agents.
2. Recommend appropriate pharmacotherapy for patients with the following neurological and psychological disorders/diseases and geriatric problems:
- A. Epilepsy and status epilepticus.
 - B. Depression.
 - C. Schizophrenia.
 - D. Geriatric issues, glaucoma, and osteoporosis.
 - E. Alzheimer's disease.
 - F. Parkinson's disease.
3. For a patient with each of the above diseases/disorders, accomplish the following:
- A. Develop a patient-centered focus and responsibility.
 - B. Perform systematic medication profile reviews.
 - C. Identify issues (potential and actual drug-related problems) associated with the patient's drug therapy.
 - D. Use a variety of resources, such as patient information, reference materials, medical chart information to work up a patient.
 - E. Establish the desired therapeutic outcomes for a patient.
 - F. Identify therapeutic alternatives for a patient.
 - G. Develop a written care plan and verbally communicate the plan to the provider.
 - H. Establish monitoring parameters as part of the therapeutic care plan.
 - I. Orally present and defend a therapeutic care plan.
 - J. Demonstrate good group dynamic skills, and cooperative learning skills.
 - A. Develop self- and peer-evaluation skills.
 - B. Develop self-learning skills.
 - C. Demonstrate the ability to function as an effective team member.

A brief Course Description

Course Name	Compounding & IV Admixtures Services		
Course Code	PHS 421		
College	College of Pharmacy		
Department/ Program	Doctor of Pharmacy (Pharm D)		
Year / Level:	9th Level / 5th Year		
Credit Hours	3		
Contact Hours	Lecture: 3	Lab/Tutorial: -----	Training: 1
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	PHS 221M		
Co-Requests:	CPP 433		
Course Objectives:	<p>A) Execute calculations appropriate for the preparation of IV admixtures and for extemporaneous compounding.</p> <p>B) Apply an understanding of the mechanics of the various types of laminar flow hoods and define their proper selection and application.</p> <p>C) Apply an understanding of the mechanics of syringes, needles, fluid bags, ampoules, filters and straws associated with IV admixtures.</p> <p>D) Identify and utilize the appropriate standard references for IV admixtures.</p> <p>E) Interpret IV/compounding orders, identify proper labelling and most identify most common sources of error in interpretation & labelling.</p> <p>F) Detail methods for properly reconstituting powders for IV administration.</p>		

	<p>G) Detail methods for properly preparing solutions for simple and complex infusions.</p> <p>H) Identify appropriate components and proper preparation of products for hyperalimentation and parenteral nutrition.</p> <p>I) Identify proper, safe methods for handling cytotoxic agents associated with IV admixture preparation.</p> <p>J) Detail the important components in designing a modern IV Admixtures and Compounding Service, including the physical facilities, methods for maintaining raw materials inventory and choice of an appropriate business model.</p>
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A brief Course Description

Course Name	Integrated Patient Care Laboratory 5		
Course Code	CPP 443		
College	College of Pharmacy		
Department/ Program	Doctor of Pharmacy (Pharm D)		
Year / Level:	9th Level / 5th Year		
Credit Hours	2		
Contact Hours	Lecture: 1	Lab/Tutorial: 3	Training: -----
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	-----		
Co-Requests:	CPP 426, CPP 427		
Course Objectives:	<p><u>Horizontal integration:</u> Students must apply what they are learning in didactic courses which are taken concurrently with this course. Specifically, each semester:</p> <ol style="list-style-type: none"> 1. Apply principles of practice management. 2. Prepare IV admixtures and TPNs. 3. Perform a pharmaceutical care work up for a patient with CHF, angina, arthritis, neurologic and psychiatric disorders. <p><u>Vertical progression:</u> The following outcomes are vertically achieved across the integrated patient care laboratory course and will be demonstrated during this semester:</p>		

1. Demonstrate effective oral and/or written communication skills with practitioners, colleagues, patients and caregivers.
2. Communication activities include interviewing, consultation, education, phone, dealing with challenging people, prepare written protocols and monographs and other forms of technical writing.
3. Interpret prescriptions/medication orders with accuracy.
4. Fill and/or compound prescriptions/medication orders with accuracy.
5. Compounding activities include oral, topical, rectal, IV and other.
6. Use informatics (computers, software, etc.) to process prescription orders, document activities and services, submit for reimbursement, and to access medical records.
7. Apply the principles of pharmaceutical care when providing patient care.
8. Perform a pharmaceutical care work up for a patient with CHF, angina, arrhythmias, arthritis neurologic and psychiatric disorders.
9. Perform basic patient assessments to evaluate the efficacy and toxicity of a patient's medication regimen.
10. Identify, solve, and prevent the following types of medication-related problems:
 - No indication for a current drug.
 - Indication for a drug but no drug prescribed.
 - Wrong drug prescribed.
 - Too much of the correct drug.
 - Too little of the correct drug.
 - An adverse drug reaction or allergy.
 - Drug-drug/drug-disease interaction.
 - Patient not receiving a prescribed drug.
 - Other.

11. Identify, manage and prevent medication errors such as adverse events, incorrect choice of therapy, equipment failure, infections related to inappropriate drug therapy and mis-interpretation of prescriptions/medical orders.
12. Interpret laboratory values and use the information in caring for a patient.
13. Perform accurate calculations related to dosage design and/or drug administration.
14. Design a dosage regimen using pharmacokinetic principles.
15. Recommend appropriate non-pharmacologic therapy.
16. Demonstrate the ability to promote public health.
17. When a patient presents self-care or Medication therapy management services assess whether a pharmacist (student pharmacist) should manage the problem or triage the patient to a physician or other health care provider.
18. Retrieve, interpret and apply drug information literature and other resources when solving a patient.

A brief Course Description

Course Name	Integrated Pharmacotherapy(7)		
Course Code	CPP 428		
College	College of Pharmacy		
Department/ Program	Doctor of Pharmacy (Pharm D)		
Year / Level:	10th Level / 5th Year		
Credit Hours	5		
Contact Hours	Lecture: 5	Lab/Tutorial: -----	Training: -----
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input checked="" type="checkbox"/> College Requirement <input type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	CPP 426, CPP 427		
Co-Requests:	CPP 429, CPP 444		
Course Objectives:	<p>4. Solve a case or problem by applying knowledge about the pharmacology and medicinal chemistry of the following drug classes:</p> <ol style="list-style-type: none"> 1. Insulins. 2. Sulfonylurea. 3. Meglitinides. 4. Alpha glucosidase inhibitors. 5. Biguanides. 6. Thiazolidinediones. 7. DPP4 inhibitors. 8. Amylin. 		

9. Incretin mimetics.
10. Gluco and mineralocorticoids
11. Thyroid and antithyroid agents.
12. Estrogen and progesterone.
13. Infertility agents.
14. Contraceptives.
15. Oxytocics.
16. Tocolytics.
17. STH and prolactin.
18. Drugs used for incontinence.
1. Recommend appropriate pharmacotherapy for patients with the following diseases: Diabetes, Adrenal Disorders, Thyroid Disorders, Women's health issues Fertility disorders, Pregnancy, Menopause, Incontinent, Clinical toxicology.
5. For a patient with each of the above disease/disorder, accomplish the following:
 - a. Develop a patient centered focus and responsibility.
 - b. Perform systemic medication profile review.
 - c. Identify issues associated with the patient's drug therapy.
 - d. Use a variety of resources, such as patient information, reference material, health care professionals, and medical chart information to work up a patient.
 - e. Establish the desired therapeutic outcome for a patient.
 - f. Develop a written care plan and verbally communicate the plan to the provider.
 - g. Establish monitoring parameters as part of the therapeutic care plan.
 - h. Orally present and defend a therapeutic care plan.
 - i. Identify therapeutic alternatives for a patient.
6. Demonstrate good group dynamic skills, and cooperative learning skills
Develop self- and peer- evaluation skills

A brief Course Description

Course Name	Integrated Pharmacotherapy(8)		
Course Code	CPP 429		
College	College of Pharmacy		
Department/ Program	Doctor of Pharmacy (Pharm D)		
Year / Level:	10th Level / 5th Year		
Credit Hours	5		
Contact Hours	Lecture: 5	Lab/Tutorial: -----	Training: -----
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input checked="" type="checkbox"/> College Requirement <input type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	CPP 426, CPP 427		
Co-Requests:	CPP 428, CPP 444		
Course Objectives:	<p>A) Recommend appropriate pharmacotherapy for patients with the following diseases:</p> <ol style="list-style-type: none"> 1. Common complex skin disorders (psoriasis). 2. HIV. 3. Systemic micotic infections. 4. Oncology. 5. Hepatitis. 6. Transplantation. 7. Critical Care. 		

- B) For a patient with each of the above disease/disorder, accomplish the following:
1. Develop a patient centered focus and responsibility.
 2. Perform systemic medication profile review.
 3. Identify issues associated with the patient's drug therapy.
 4. Use a variety of resources, such as patient information, reference material, health care professionals, and medical chart information to work up a patient.
 5. Establish the desired therapeutic outcome for a patient.
 6. Develop a written care plan and verbally communicate the plan to the provider.
 7. Establish monitoring parameters as part of the therapeutic care plan.
 8. Orally present and defend a therapeutic care plan.
- C) Demonstrate good group dynamic skills, and cooperative learning skills.
- D) Develop self- and peer- evaluation skills.
- E) Develop self-learning skills.
- F) Demonstrate the ability to function as an effective team member.
- G) Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field).
- H) The course has undergone many improvements that should be maintained:
1. Expert faculty giving relevant topics.
 2. Assigning TA to ease the chores of the course transition.
 3. Online Quizzes and assignment submittals.
 4. The course starts with the oncology topics to be better aligned with the lab 6 topics.
 5. All instructors should be involved in giving a journal club session.

A brief Course Description

Course Name	Pharmacy practice experience (3) (Institutional)		
Course Code	CPP 433		
College	College of Pharmacy		
Department/ Program	Doctor of Pharmacy (Pharm D)		
Year / Level:	10th Level / 5th Year		
Credit Hours	4		
Contact Hours	Lecture: -----	Lab/Tutorial: -----	Training:160
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input checked="" type="checkbox"/> College Requirement <input type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	CPP 432M		
Co-Requests:	CPP 428, CPP 429, CPP 444		
Course Objectives:	<ol style="list-style-type: none"> 1. Description of the knowledge to be acquired: knowledge about institutional pharmacy practice and roles/responsibilities of pharmacist in the institutional setting. 2. Description of Cognitive Skills to be developed: critical thinking and problem solving. 3. Description of the interpersonal skills and capacity to carry responsibility to be developed like: <ol style="list-style-type: none"> A. Responsibility for own learning. B. Group participation and leadership: Work collaboratively with colleagues in the community pharmacy. 		

	<ul style="list-style-type: none">C. Act responsibly-personal and professional situations.D. Ethical standards of behavior. <p>4. Description of the skills to be developed in this domain like:</p> <ul style="list-style-type: none">A. Communication-verbal and written.B. Demonstrate effective communications with pharmacist preceptors.C. Demonstrate the ability to perform a patient interview. <p>5. Demonstrate the ability to perform the MTM process.</p> <p>6. Demonstrate the ability to perform patient counseling.</p> <p>7. Prepare a SOAP note that summarizes the findings from the MTM work up.</p> <p>8. Prepare a written response to a drug information question.</p> <p>9. Description of the psychomotor skills to be developed and the level of performance required.</p> <p>10. Prepare IV fluids and TPNs.</p>
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A brief Course Description

Course Name	Integrated Patient Care Laboratory 6		
Course Code	CPP 444		
College	College of Pharmacy		
Department/ Program	Doctor of Pharmacy (Pharm D)		
Year / Level:	10th Level / 5th Year		
Credit Hours	2		
Contact Hours	Lecture: 1	Lab/Tutorial: 3	Training: -----
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input checked="" type="checkbox"/> College Requirement <input type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	CPP 443, CPP 426, CPP 427		
Co-Requests:	CPP 428, CPP 429, CPP 433		
Course Objectives:	<p>Summary of the main learning outcomes for students enrolled in CPP 526 course.</p> <p><u>Horizontal integration:</u> Students must apply what they are learning in didactic courses which are taken concurrently with this integrated patient Care Laboratory course. Specifically, each semester:</p> <ol style="list-style-type: none"> 1. Apply principles and concepts related to the pharmaceutical sciences to the care of patients. Examples include: <ul style="list-style-type: none"> - Explain to a pharmacist the pharmacoepidemiological findings that support an adverse drug reaction. - Interpret pharmaco-economic data and provide recommendations. 2. Retrieve drug information and answer drug information questions. 		

3. Apply pharmacy laws to solve practice problems.
4. For a patient who seeks self-care, conduct an assessment and recommend either appropriate self-care therapy or triage to a physician.
5. For a patient with a chronic disease, conduct a work up using Medication Therapy management process.

Vertical progression: The following outcomes are vertically achieved across the Integrated Patient Care Laboratory Sequence and will be demonstrated during this semester:

1. Demonstrate effective oral and/or written communication skills and practitioners, colleagues, patients and caregivers.
2. Interpret prescriptions/medication orders with accuracy.
 - A. Prescription for a cream
 - B. Prescription for an oral suspension
 - C. Prescription for an oral liquid for a child
3. Fill and /or compound prescriptions/medication orders with accuracy.
 - A. Prescription for a cream
 - B. Prescription for an oral suspension
 - C. Prescription for an oral liquid for a child
4. Use informatics (computers, software, etc.) to process prescription orders, document activities and services, submit for reimbursement, and to access medical records.
5. Apply the principles of pharmaceutical care when providing patient care.
6. Use the pharmaceutical care process when a patient presents with chronic renal failure
7. Perform basic patient assessments to evaluate the efficacy and toxicity of a patient's medication regimen.
8. Identify, solve, and prevent the following types of medication-related problems:
 - No indication for a current drug
 - Indication for a drug but no drug prescribed

- Wrong drug prescribed
 - Too much of correct drug
 - Too little of the correct drug
 - And adverse drug reaction or allergy
 - Drug-drug/drug-disease interaction
 - Patient not receiving a prescribed drug
 - Other
9. Identify, manage and prevent medication errors such as adverse events, incorrect choice of therapy, equipment failure, infections related to inappropriate drug therapy, and mis-interpretation of prescriptions/medical orders.
 10. Interpret laboratory values and use the information in caring for a patient.
 11. Perform accurate calculations related to dosage design and/or drug administration.
 12. Assess socioeconomic, cultural, and demographic factors that impact a patient's medication therapy and care.
 13. Make evidence-based decisions that are based on evidence and use of problem-solving and clinical decision-making skills.
 14. Follow legal requirements and use ethical decision-making in providing all aspects of patient care.
 15. Demonstrate professionalism
 16. Briefly describe any plans for developing and improving the course that are being implemented. For Toxicology part in this course we will do a deal with poison and drug information centers to let the student have the real case from them. (e.g.: King Abdallah medical hospital)