Hashemite University
Faculty of Pharmaceutical Sciences
Department of Pharmaceutics and Pharmaceutical Technology

Semester: First semester **Year: 2022/2023**

Course Information	
Course Title	**Practical Pharmaceutical Compounding and Calculation**
Course Number	**131701232**
Credit Hours	**1**
Prerequisites	**(131701231) or (1917011231) concurrent requirement and (110103108)**

Instructor		
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Course Description

The pharmaceutical calculation and compounding lab focuses on a number of interests in the pharmaceutical fields, this includes: the fundamentals of calculations, compounding of solutions, suspensions, emulsions, semisolids, and suppositories preparations, in addition to build up students'information regarding preparations and dispensing.

This course aims to provide the students with good knowledge in calculations, formulation and extemporaneous dispensing, packaging, and storage of medicines. Specifically, solutions, suspensions, emulsions, creams, ointments and gels as well as suppositories are discussed along with their various types, additives, and methods of preparation, common examples, packaging and quality requirements.

Course Objectives

1. Gaining a sound base for all aspects of good pharmacy practice.
2. Managing a laboratory environment, including the correct use and selection of equipment andingredients.
3. Interpret symbols, abbreviations, and terminology used in prescription writing.
4. Understand important physicochemical properties of the ingredients, as they relate tocompounded preparations that are stable, safe, and efficacious.
5. Learning how to interpret a prescription and how to extemporaneously compound such aprescription product by putting knowledge into practice.
6. Knowledge in calculations, formulation and extemporaneous dispensing, packaging, andstorage of medicines.
7. Make necessary calculations accurately and precisely.
8. Weigh and measures ingredients accurately, including selecting the most appropriateapparatus for weighing or measuring.
9. Through repetition, become competent with the fundamental skills of pharmacy compounding
10. Select appropriate auxiliary and cautionary labels to assure proper use and storage ofpreparations
11. Determine the appropriate information with which to counsel patients.

Intended Learning Outcomes

A. Knowledge and Understanding:

1. To acquire knowledge of all aspects of extemporaneous dispensing.
2. To understand the different dosage forms and their intended use.

B. Intellectual skills (cognitive and analytical):

1. To apply knowledge of physical concepts when formulating extemporaneous formulations.
2. To understand the use of excipients in a given formulae and to be able to predict the final obtained dosage form.

C. Subject specific skills

1. Confidence in using different techniques, which are fundamental to goodcompounding.
2. Adequate correlation between theoretical principles and laboratory skills.

D. Transferable Skills

1. Team work.
2. Good pharmacy practice
3. Selection of proper equipment and the application of correct manipulativetechniques, as well as selection of suitable excipients for the prepared dosage form.

Reading List / References:

Supplementary Textbook(s)

1	Applied Pharmaceutics in Contemporary Compounding, Robert Shrewsbury.
2	Pharmaceutical Compounding and Dispensing, John Marriott, Keith Wilson,Christopher Langley, and Dawn Belcher
3	Pharmaceutical Practice, A.J. Winfield, J.A. Rees and I.Smith. 4th edition, 2009. Published by Churchill Livingstone.
4	Pharmaceutical dosage forms and drug delivery systems, Ansel H.C., Popovich N.G.,Allen L.V. 7th edition, 2000. Published by Williams and Wilkins.
5	Remington- The Science and Practice of Pharmacy, David Troy
6	Handbook of Pharmaceutical Excipients, Raymond Rowe
7	USP/ BP/Martindale: The Extra Pharmacopeia and http://pharmlabs.unc.edu

Course Contents					
Week	**Credit Hours**	**ILOs**	**Topics**	**Teaching Procedure**	**Assessment methods**
1	1	A1, A2,B1,	1. General Instructions and LaboratorySafety Rules 2. Key Formulation Skills: Appendix I: Weighing and Measuring Appendix II: Abbreviations commonly used within pharmacy	Lecture+ discussion Video presentations & Animation	- Class participation
2	3	A1, A2,B1,	Key Formulation Skills: Pharmaceutics principles and calculations.	Video presentations + Brief discussion	- Class participation - Laboratory Report - Quizzes - Lab work evaluation - Assignment
3	3	A1, A2, B1, B2, C1, C2, D1,D2,D3	Liquid dosage forms: solutions Aqueous solutions (1): Aromatic water and ear drops ..etc (2) Syrups	Brief discussion + Video for laboratory work + Brain storming	- Class participation - Laboratory Report - Quizzes - Lab work evaluation - Assignment
4	3	A1, A2, B1, B2, C1, C2, D1,D2,D3	Liquid dosage forms: solutions Hydro- alcohol solutions: spirits, elixirs and tinctures ..etc	Brief discussion + Video for laboratory work + Brain storming	- Class participation - Laboratory Report - Quizzes - Lab work evaluation - Assignment
5	3	A1, A2, B1, B2, C1, C2, D1,D2,D3	Liquid dosage forms: Dispersed Systems Suspensions	Brief discussion + Video for laboratorywork + Brain storming	- Class participation - Laboratory Report - Quizzes - Lab work evaluation - Assignment
7	3	A1, A2, B1, B2, C1, C2, D1,D2,D3	Liquid dosage forms: Dispersed Systems Emulsions and Gels	Brief discussion + Video for laboratorywork + Brain storming	- Class participation - Laboratory Report Quizzes - Lab work evaluation - Assignment
8	3	A1, A2, B1, B2, C1, C2, D1,D2,D3	Semisolids dosage forms: Dispersed Systems Creams	Brief discussion + Video for laboratory work + Brain storming	- Class participation - Laboratory Report - Quizzes - Lab work evaluation
10	3	A1, A2, B1, B2, C1, C2, D1,D2,D3	Semisolids dosage forms: Dispersed Systems Ointments and Pastes	Lecture+ discussion Video for laboratorywork	- Class participation - Laboratory Report - Quizzes
11	3	A1, A2, B1, B2, C1, C2, D1,D2,D3	Solid Dosage forms:Suppositories	Lecture+ discussion Video for laboratorywork	- Class participation - Laboratory Report - Quizzes - Lab work evaluation

Grade Distribution		
Assessment	**Grade**	**Date**
1. Quizzes (oral and written)	15%	weekly
2. Reports	10%	weekly
3. Product Quality Evaluation	5%	weekly
4. Lab Evaluation (lab performance, readiness, etc)	10%	weekly
5. Mid Exam (Theoretical)	20%	The 9th week
6. Final Practical exam	15%	The 13th week
7. Final Exam (Theoretical)	25%	The 14th week

Student Evaluation (out of 10):

Each student is evaluated weekly based on the following points:

- ***A.*** Attendance punctuality **(2 mark)**
- ***B.*** Behavior and adherence to basic lab requirements (e.g. Appearance: lab-Coat, hair) **(2 mark)**
- ***C.*** Availability of Foil, Gloves, Markers, & Cleaning tools **(1 mark)**
- ***D.*** Balance & Machines Use & Tools Use & their Cleaning **(2.5 mark)**
- ***E.*** Procedure: Preparation & Adherence **&** Time frame **(2.5 mark)**

Product Quality Evaluation (out of 5):

To be determined exactly based on the type of the product

Important regulations

- On average, students need to spend 2 hrs of study and preparation weekly.
- Excellent attendance is expected. According to the university policy, students who miss more than 15% of the lab hours with or without excuse will be dismissed from the course
- At the beginning of the lab, be on time and don't leave before the end of the lab session without an accepted excuse
- If you missed a lab session, it is your responsibility to find out about any announcements or assignments you have missed
- For any clarification, please communicate your instructor at his posted office hours or by appointment
- Switch off your mobile or keep it silent throughout the lecture
- Listen well to the lab discussion and avoid side discussions, if you have a question, ask your instructor and not your college
- Cheating, academic misconduct, fabrication and plagiarism will not be tolerated, and the university policy will be applied
- Each student is expected to familiarize himself with **laboratory rules and safety precaution.**

Last updated on 06 / 10 / 2022 by: M.SC. Mai Jaber & M.Sc. Eqbal Abu –alkebash