

**Course syllabus** **College of Pharmacy**

<b>Course code</b>	PHA 213	<b>Credit No.</b> 1(0-3-2)
<b>Course title</b>	Pharmaceutical Technology Laboratory 1	<b>Section</b> 11, 12, 13, 14
<b>Semester</b>	2	<b>Academic year</b> 2023
<b>Students</b>	Pharmacy students, 2 <sup>nd</sup> year	

**Instructor(s)**

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| 1. Assoc.Prof.Poj Kulvanich, Ph.D.      | 2. Assoc.Prof.Wipada Samprasit, Ph.D.          |
| 3. Asst.Prof.Verisa Chowjarean, Ph.D.   | 4. Asst.Prof.Chutima Sinsuebpol, Ph.D.         |
| 5. Asst.Prof.Benchawan Chamsai, Ph.D.   | 6. Asst.Prof.Sirima Sangkapat, Ph.D.           |
| 7. Asst.Prof.Narumon Changsan, Ph.D.    | 8. Asst.Prof.Sucharat Limsitthichaikoon, Ph.D. |
| 9. AVM. Thavisak Teruya, Ph.D.          | 10. Nuntachai Hanpramukkun, Ph.D.              |
| 11. Dawlurk Raemonkorn, M.Sc. in Pharm. | 12. Chitralada Vasarach, M.Sc. in Pharm.       |
| 13. Kasitpong Thanawuth, Pharm.D.       | 14. Kwanchai Donthongdee, B.Sc.                |

**Course coordinator(s)** Asst.Prof.Sirima Sangkapat, Ph.D.

Nuntachai Hanpramukkun, Ph.D. and  
Kasitpong Thanawuth, Pharm.D.

**Class hours and location** Sec 11 Thursday, 09.00 a.m. – 12.00 p.m., 4-221  
Sec 12 Thursday, 01.00 p.m. – 04.00 p.m., 4-221  
Sec 13 Friday, 09.00 a.m. – 12.00 p.m., 4-221  
Sec 14 Friday, 01.00 p.m. – 04.00 p.m., 4-221

**Pre-requisite course(s)** PHA 211 Principle of Pharmaceutical Technology

**Co-requisite course(s)** PHA 212 Pharmaceutical Technology 1

**Course description**

Application of pharmaceutical technology principles; pharmaceutical dosage forms classification, pharmaceutical calculations, physicochemical properties of powders, micromeritics, particles mixing and size reduction in the preparation of powders, granules, pills, lozenges and pellets dosage forms.

**Learning objectives** When completion of this course, the students should be able to:

1. Use the pharmaceutical basic instrument and techniques ex. weight, measurements
2. Practice the pharmaceutical basic techniques ex. mixing, size reduction, filtration

3. Explain pharmaceutical formulation characters including their stabilities
4. Explain the effect of physicochemical property on powder preparations
5. Use suitable pharmaceutical necessity for liquid and solid dosage forms
6. Prepare solid dosage forms according to pharmacopeia and prescriptions

**Course outlines** (as shown in table below)

#### Methods of Instruction

1. In-class practice, demonstration and pharmaceutical basic techniques training
2. Questioning, discussion and presentation
3. The innovation is incorporated in learning activities and evaluation of this course ex. Kahoot, Socrative, Google Classroom, MS Team

#### Assessment

Learning evaluations include

- Paper examinations will cover all topics in course outlines. Weighted components of paper examination are allocated as percent content of each topic and divided into:

Examination 1	Midterm exam	14%
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Examination 2	Final exam	26%
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Practice examinations are allocated as percent content of each topic and divided into:

Integration of essential skills in pharmaceutical compounding	15%
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Integration of pharmaceutical preparations	40%
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- Laboratory report 2%
- Quiz / Assignment / Homework 3%
- Grading Criteria: Earning marks lower than 50% is considered as F grade.
- Student grades must be approved by the academic committee and the academic standards board of the college.

**Note** Class attendance is not less than 80% of all class sessions.

**Required texts and references**

1. Sinko P.J. Martin's physical pharmacy and pharmaceutical sciences: physical chemical and biopharmaceutical principles in the pharmaceutical sciences. 5<sup>th</sup> ed. Philadelphia: Lippincott Williams and Wilkins; 2006.

**Special materials and data**

1. Allen LV, Popovich NG, Ansel HC, editors. Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems. 10<sup>th</sup> ed. Philadelphia: Lippincott Williams and Wilkins; 2013.
2. Troy DB, editors. Remington: the science and practice of pharmacy. 21<sup>st</sup> ed. Philadelphia: Lippincott Williams and Wilkins; 2006.

**Suggested materials and data**

1. The United States Pharmacopeia, 40<sup>th</sup> ed. and The National Formulary, 35<sup>th</sup> ed. Asian edition. Rockville MD: USP Convention; 2017.

### Course outline

**Course code/ Course title** PHA 213 **Credit No.** 1(0-3-2)  
 Pharmaceutical Technology Laboratory 1  
**Semester** 2 **Academic year** 2023  
**Class hours and location** Sec 11 Thursday, 09.00 a.m. – 12.00 p.m., 4-221  
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 Sec 14 Friday, 01.00 p.m. – 04.00 p.m., 4-221

No.	Day	Topics	Instructor(s)
1	4, 5 Jan 2024	Introduction to course  Lab Safety Consideration & Fingerprint registration	Asst.Prof.Sirima Sangkapat, Ph.D.  Kwanchai Donthongdee, B.Sc.
2	11, 12 Jan 2024	I. Pharmacy prescription  II. Pharmaceutical reference searching	Asst.Prof.Benchawan Chamsai, Ph.D. and Staffs  Assoc.Prof.Wipada Samprasit, Ph.D. and Staffs
3	18, 19 Jan 2024	Essential skills in pharmaceutical compounding (I) - Weighing - Tritulation & Levigation - Miscellaneous	Asst.Prof.Sucharat Limsitthichaikoon, Ph.D. and Staffs
4	25, 26 Jan 2024	Essential skills in pharmaceutical compounding (II) - Measurements - Filtration - Miscellaneous	Chitralada Vasarach, M.Sc. in Pharm. and Staffs
5	1, 2 Feb 2024	I. Integration of essential skills in pharmaceutical compounding (I)  II. Pharmaceutical dosage forms - Types and Physical signs of deterioration of dosage forms	Asst.Prof.Sirima Sangkapat, Ph.D. and Staffs  Asst.Prof.Narumon Changsan, Ph.D. and Staffs

No.	Day	Topics	Instructor(s)
		- Example of COA & Product specification ***หัวข้อ II. มีสอบข้อเขียน	
6	8, 9 Feb 2024	Integration of essential skills in pharmaceutical compounding (II)	Pharmaceutical Technology Staffs
7	15, 16 Feb 2024	Size reduction, mixing and physicochemical properties of powder	Assoc.Prof.Wipada Samprasit, Ph.D. and Staffs
Midterm exam, 19 February-1 March 2024 (No.2, 5, 7)			
8	7, 8 Mar 2024	Particle size distribution I - Sieve analysis and Andreasen apparatus	Asst.Prof.Verisa Chowjarean, Ph.D. and Staffs
9	14, 15 Mar 2024	Particle size distribution II - Particle size distribution calculation	Dawlurk Raemonkorn, M.Sc. in Pharm. and Staffs
10	21, 22 Mar 2024	Micromeritics - Derived properties of powder	AVM. Thavisak Teruya, Ph.D. and Staffs
11	28, 29 Mar 2024	Powder & granule preparations	Asst.Prof.Verisa Chowjarean, Ph.D. and Staffs
12	4, 5 Apr 2024	Formulation of powders	AVM. Thavisak Teruya, Ph.D. and Staffs
13	11, 12 Apr 2024	Lozenge, pastille and pills preparations	Asst.Prof.Sirima Sangkapat, Ph.D. and Staffs
14	18, 19 Apr 2024	Integration of pharmaceutical preparations (I) : Case study (Powder & granule preparations)	Asst.Prof.Verisa Chowjarean, Ph.D. Asst.Prof.Sirima Sangkapat, Ph.D. Kasitpong Thanawuth, Pharm.D.
15	25, 26 Apr 2024	Integration of pharmaceutical preparations (II) : Powders and granules formulation	Pharmaceutical Technology Staffs
Final exam, 29 April-9 May 2024 (No. 8-13)			