

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

Course code	PHR 113	Credit No. 1(0-3-2)
Course title	Pharmaceutical Technology Laboratory 1	Section 11, 12, 13
Semester	2	Academic year 2024
Students	Pharmacy students, 1 st year	

Instructor(s)

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| 1. Assoc.Prof.Poj Kulvanich, Ph.D. | 2. Assoc.Prof.Sucharat Limsitthichaikoon, Ph.D. |
| 3. Assoc.Prof.Wipada Samprasit, Ph.D. | 4. Asst.Prof.Verisa Chowjarean, Ph.D. |
| 5. Asst.Prof.Chutima Sinsuebpol, Ph.D. | 6. Asst.Prof.Benchawan Chamsai, Ph.D. |
| 7. Asst.Prof.Sirima Sangkapat, Ph.D. | 8. Asst.Prof.Narumon Changsan, Ph.D. |
| 9. AVM. Thavisak Teruya, Ph.D. | 10. Mallika Pongsathit, Ph.D. |
| 11. Nuntachai Hanpramukkun, Ph.D. | 12. Dawlurk Raemonkorn, M.Sc. in Pharm. |
| 13. Chitralada Vasarach, M.Sc. in Pharm. | 14. Natawat Chankana M.Sc. (Pharmacy) |
| 15. Kasitpong Thanawuth, Pharm.D. | 16. Kwanchai Donthongdee, B.Sc. |

Course coordinator(s) Assoc.Prof.Sucharat Limsitthichaikoon, Ph.D.
Asst.Prof.Sirima Sangkapat, Ph.D. and
Nuntachai Hanpramukkun, Ph.D.

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

Pre-requisite course(s) PHR 111 Fundamentals of Pharmaceutical Technology

Co-requisite course(s) PHR 112 Pharmaceutical Technology 1

Course description

Application of pharmaceutical technology principles; prescription reading practice, pharmaceutical calculations and basic compounding techniques, pharmaceutical references searching, physicochemical properties of powders, micromeritics, size reduction and powder mixing in the preparation of powders, granules, pills and pastilles dosage forms.

Course learning outcomes: CLOs When completion of this course, the students should be able to:

1. PHR113-CLO1-PLO3.1 Define alternate dosage forms and specify the physical deterioration of pharmaceutical dosage forms
2. PHR113-CLO2-PLO3.1 Utilize fundamental skills for pharmaceutical reference searching, drug prescription translation, pharmaceutical calculations, and basic competencies in pharmaceutical compounding
3. PHR113-CLO3-PLO3.1 Apply knowledge of related pharmaceutical technology and essential basic skills in pharmaceutical compounding to prepare powder, granule, pill and lozenge
4. PHR113-CLO4-PLO3.1 Collaborate in providing data to formulate or improve the formulation case study
5. PHR113-CLO5-PLO5.1 Commitment, dedication, and reliability for designated responsibilities
6. PHR113-CLO6-PLO5.1 Ensure discipline, punctuality, and focus on safety during practical training.

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 Teams

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	Final exam	15%
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- Practice examinations are allocated as percent content of each topic and divided into:

Integration of essential skills in pharmaceutical compounding	25%
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Integration of pharmaceutical preparations	55%
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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. Ansel HC, Stockton SJ. Pharmaceutical calculations. 15th ed. Philadelphia: Wolters Kluwer: Lippincott Williams & Wilkins; 2017.
2. Allen LV, Ansel HC. Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems. 10th ed. Philadelphia: Lippincott Williams & Wilkins; 2013.
3. Aulton ME, Taylor KMG. Aulton's pharmaceuticals: the design and manufacture of medicines. 5th ed. Edinburgh: Churchill Livingstone/Elsevier; 2018.
4. Sinko PJ. Martin's physical pharmacy and pharmaceutical sciences: physical chemical and biopharmaceutical principles in the Pharmaceutical sciences. 7th ed. Philadelphia: Lippincott Williams and Wilkins; 2017.

Special materials and data

1. David BT, Paul B. Remington: the science and practice of pharmacy. 22nd ed. Philadelphia: Lippincott Williams and Wilkin; 2013.
2. Cooper JW, Gunn C, Carter SJ. Cooper and Gunn's Tutorial Pharmacy. 6th ed. New Delhi: CBS Publishers & Distributors Pvt. Ltd; 2005.
3. Ghosh TK., Jasti BR. Theory and Practice of Contemporary Pharmaceutics. Florida: CRC Press; 2005.

Suggested materials and data

1. Allen LV Jr. The art, science, and technology of pharmaceutical compounding. 4th ed. Washington, D.C.: American Pharmacists Association; 2012.
2. The United States Pharmacopeia, 40th ed. and The National Formulary, 35th ed. Asian edition. Rockville MD: USP Convention; 2017.
3. The British Pharmacopoeia, Vol 1-2. London: Her Majesty's Stationery Office; 2017.
4. สภาเภสัชกรรม. คู่มือทักษะตามเกณฑ์ความรู้ความสามารถทางวิชาชีพของผู้ประกอบวิชาชีพเภสัชกรรม (สมรรถนะร่วม) พ.ศ. 2562.

Course outline

Course code/ Course title	PHR 111 Pharmaceutical Technology Laboratory 1	Credit No. 1(0-3-2)
Semester	2	Academic year 2024
Class hours and location	Sec 11 Wednesday, 09.00 a.m. – 12.00 p.m., 4-221 Sec 12 Wednesday, 01.00 p.m. – 04.00 p.m., 4-221 Sec 13 Thursday, 09.00 a.m. – 12.00 p.m., 4-221	

No.	Day	Topics	Instructor(s)
1	8, 9 Jan 2025	Introduction to course Lab Safety Consideration & Fingerprint registration	Asst.Prof.Sucharat Limsitthichaikoon, Ph.D. Kwanchai Donthongdee, B.Sc.
2	15, 16 Jan 2025	Essential skills in pharmaceutical technology - Pharmacy prescription - Pharmaceutical reference searching	Asst.Prof.Benchawan Chamsai, Ph.D. and Staffs Assoc.Prof.Wipada Samprasit, Ph.D. and Staffs
3	22, 23 Jan 2025	Essential basic skills in pharmaceutical compounding I	Assoc.Prof.Sucharat Limsitthichaikoon, Ph.D. and Staffs
4	29, 30 Jan 2025	Essential basic skills in pharmaceutical compounding II	Chitralada Vasarach, M.Sc. in Pharm. and Staffs
5	5, 6 Feb 2025	Integration of essential skills in pharmaceutical compounding (I)	Asst.Prof.Sirima Sangkapat, Ph.D. and Staffs
6	12, 13 Feb 2025	Integration of essential skills in pharmaceutical compounding (II)	Asst.Prof.Sirima Sangkapat, Ph.D. and Staffs
7	19, 20 Feb 2025	Integration of essential skills in pharmaceutical compounding (III)	Pharmaceutical Technology Staffs
Midterm exam, 24-28 February 2025			
8	12, 13 Mar 2025	Particles size reduction and powder mixing	Assoc.Prof.Wipada Samprasit, Ph.D. and Staffs
9	19, 20 Mar 2025	Particle size distribution I	Asst.Prof.Verisa Chowjarean, Ph.D.

No.	Day	Topics	Instructor(s)
		- Sieve analysis and Andreasen apparatus Particle size distribution II - Particle size distribution calculation	Dawlurk Raemonkorn, M.Sc. in Pharm. and Staffs
10	26, 27 Mar 2025	Physicochemical & derived properties of powder	AVM. Thavisak Teruya, Ph.D. and Staffs
11	3, 4 Apr 2025	Powder & granule preparations	Asst.Prof.Verisa Chowjarean, Ph.D. and Staffs
12	9, 10 Apr 2025	Integration of pharmaceutical preparations (I) : Case study (Powder & granule preparations)	Kasitpong Thanawuth, Pharm.D. and Staffs
13	16, 17 Apr 2025	Self-study	Asst.Prof.Sirima Sangkapat, Ph.D. and Staffs
14	23, 24 Apr 2025	I. Lozenge, pastille and pills preparations II. Integration of pharmaceutical preparations (II) : Case study (Powder & granule preparations) ***หัวข้อ I. มีสอบข้อเขียน	Asst.Prof.Sirima Sangkapat, Ph.D. and Staffs
15	1, 2 May 2025	Integration of pharmaceutical preparations (II): Powders and granules formulation	Pharmaceutical Technology Staffs
Final exam, 28 April - 7 May 2025 (No. 8-14)			