**Course Specification**

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| - Institution: King Saud University |
| - College/Department: College Pharmacy/Department Pharmaceutics |

# A. Course Identification and General Information

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| 1. Course title and code: Pharmaceutics-1 (PHT 221) |
| 2. Credit hours: 3 (2+1) |
| 3. Program(s) in which the course is offered: Doctor of Pharmacy |
| 4. Name of faculty member responsible for the course: |
| 5. Level/year at which this course is offered: Level 4 |
| 6. Pre-requisites for this course (if any): PHT 210 |
| 7. Co-requisites for this course (if any): none |
| 8. Location if not on main campus: NA |
| 9. Teaching language: English. |

B. Objectives:

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| 1. Summary of the main learning outcomes for students enrolled in the course.  This course deals with preparation of fluid pharmaceutical dosage forms. The following main subjects are going to be covered: pharmaceutical solutions, pharmaceutical suspensions, pharmaceutical emulsions, colloidal systems, liposomal and nanoparticles preparations and aerosols, drug stability and shelf life of each dosage form.  By the end of this course, the student has the ability to describe and understand the concepts of liquid dosage forms, types of these dosages (solutions and colloidal and course dispersions), methods of preparations, rationale of clinical uses, applications, advantages and drawbacks, shelf life and factors affecting drug stability. |
| 2. 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)   1. In-spot inclusion of any recent advances in the field of any topic in the course. 2. Provision to the students of any Internet sites that help in the understanding of the course contents. |

1. Course Description (Note: General description in the form to be used for the Bulletin or Handbook should be attached)

This course deals with preparation of fluid pharmaceutical dosage forms. It has been designed to help pharmacy student to understand the concepts of liquid dosage forms, types of these dosages (solutions and colloidal and course dispersions), preparation methods, rationale of clinical uses, applications, advantages and drawbacks, shelf life and factors affecting drug stability. The following main subjects are going to be covered: pharmaceutical solutions, pharmaceutical suspensions, pharmaceutical emulsions, colloidal systems, liposomal and nanoparticles preparations and aerosols, drug stability and shelf life.

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| 1. Topics to be Covered | | |
| Topic | No of Weeks | Contact hours |
| Solutions | 3 | 6 |
| Suspensions | 3 | 6 |
| Emulsion | 3 | 6 |
| Colloidal dispersion systems | 2 | 4 |
| Liposomes and niosomes Microemulsion | 1 | 2 |
| Nanoparticles | 1 | 2 |
| Aerosols | 1 | 2 |

2. Course components (total contact hours per semester):

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| Lecture:  28 | Tutorial: | Practical/Fieldwork/Internship:  42 hours (contact) | Other:  Exams 2 hours |

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| 3. Additional private study/learning hours expected for students per week. (This should be an average  :for the semester not a specific requirement in each week) 14 hours / femester |
| 1. Development of Learning Outcomes in Domains of Learning For each of the domains of learning shown below indicate:    * A brief summary of the knowledge or skill the course is intended to develop;    * A description of the teaching strategies to be used in the course to develop that knowledge or skill;    * The methods of student assessment to be used in the course to evaluate learning outcomes in the domain concerned. |
| a. Knowledge |
| 1. Description of the knowledge to be acquired   By the end of the this course the student has the ability to:   * 1. Define and describe different types of liquid dosage forms; including solutions, emulsions, suspensions, colloidal systems (e.g. liposomes and niosomes, microemulsions, and nanoparticles) and aerosols.   2. Define the basic physical principles related to the above mentioned pharmaceutical dosage forms which include solubility, interfacial phenomena, and rheology).   3. Prepare and evaluate different types of liquid dosage forms (solution, suspensions, emulsions). |
| 1. Teaching strategies to be used to develop that knowledge    1. Lectures.    2. Practical lab. |
| 1. Methods of assessment of knowledge acquired    1. Exams.    2. Open discussion during the lecture and the lab. |
| b. Cognitive Skills |

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| (i) Cognitive skills to be developed  1- Differences between the constituents of the various liquid forms and aerosols. 2- Understanding of the basic principles in the preparation of the various liquid  dosage forms and aerosols .  3- Knowledge of the various factors that attect . helpira the preparation of the liquid dosage form. |
| 1. Teaching strategies to be used to develop these cognitive skills    1. Lectures.    2. Practical. |
| (ii) Methods of assessment of students cognitive skills  Exams = the retical and practical. |
| c. Interpersonal Skills and Responsibility |
| (i) Description of the interpersonal skills and capacity to carry responsibility to be developed  N A |
| (ii) Teaching strategies to be used to develop these skills and abilities  N A |
| (iii) Methods of assessment of students interpersonal skills and capacity to carry responsibility  N A |
| d. Communication, Information Technology and Numerical Skills |
| (i) Description of the skills to be developed in this domain.   * The ability to use word processing programs * The ability to use excels programs. * The ability to use the Internet and navigate a useful we b sites containing information related to this course. |
| (iii) Teaching strategies to be used to develop these skills  Lectures Home works. |
| (iv) Methods of assessment of students numerical and communication skills  exams |
| e. Psychomotor Skills (if applicable) |
| (i) Description of the psychomotor skills to be developed and the level of performance required  N A |

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| (ii) Teaching strategies to be used to develop these skills  N A |
| (iii) Methods of assessment of students psychomotor skills  N A |

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| 5. Schedule of Assessment Tasks for Students During the Semester | | | |
| Assessment | Assessment task (e.g. essay, test, group project, examination etc.) | Week due | Proportion of Final  Assessment |
| 1 | First midterm exam. | 6-7 | 15 |
| 2 | Second midterm exam. | 13-14 | 15 |
| 3 | Quizzes and Performance in the lab. | Through out the semester | 10 |
| 4 | Final lab exam. | 14 | 20 |
| 5 | Final exam | 16 | 40 |
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# Student Support

1. Arrangements for availability of faculty for individual student consultations and academic advice. (Include amount of time faculty are available each week)

Office house (2 hours per week)

*E Learning Resources*

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| 1. Required Text(s) Remington, the science and practice of pharmacy puliser lipincott (2011). |
| 2. Essential References   1. Pharmaceutics the science of dosage form design. By M. Aulton 2. Physical Pharmacy. By Patrick J Sinko. Pulhisher liyincott (2010). |
| 3- Recommended Books and Reference Material (Journals, Reports, etc) (Attach List) Pharmaceutical Dosage Forms and Drug Delivery Systems Sixth Edition by Howard C. Ansel, Nicholas G. Popovich and Loyd V. Allen, Jr. Lea & Febiger, Philadelphia, London. (2011)  United States Pharmacopeia (USP). British Pharmacopeia (BP).  International Journal of Pharmaceutics. |
| 4- Electronic Materials, Web Sites etc.  [www.pubmed.com](http://www.pubmed.com/) |
| 5- Other learning material such as computer-based programs/CD, professional standards/regulations |

# F. Facilities Required

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| Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.) |
| 1. Accommodation (Lecture rooms, laboratories, etc.)  Class room capacity loostudents Laboratory capacity 25 students. |
| 2. Computing resources  One computer for classroom and another one for laboratory with their audio/visional aids. |
| 3. Other resources (specify --e.g. If specific laboratory equipment is required, list requirements or attach list)  Balances, pH meters, heaters, water baths, glass wares, and mortars (glass and  Porcelain). |

G. Course Evaluation and Improvement Processes

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| 1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching  Taking the feedback by direct contact with students. Asking students to provide the lecturer with their notes.  Using the results of KSU web site evaluation sheet filled by student for this course. |
| 2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department discussions in the departmental (ouncil B) matiags with students . |
| 3. Processes for Improvement of Teaching training of staff. |
| 4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent faculty member of a sample of student work, periodic exchange and remarking of a sample of assignments with a faculty member in another institution) comparison of the students marks in mil find exams |
| 5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.  Semiannual evaluation (at the beginning of each semester) of notes taken from the previous semester.  Revising the obstacles and difficulties that students faced and applying different ways to solve these problems.  Taking and registering frequent students’ notes and feedback. |