|  |  |
| --- | --- |
| **Course Title:** | **Pharmaceutics 1** |
| **Course Code:** | **PHCU332** |
| **Program:** | **Pharmaceutical Sciences** |
| **Department:** | **Pharmaceutics** |
| **College:** | **Pharmacy** |
| **Institution:** | **Najran University** |

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# A. Course Identification

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1. Credit hours: 3 hours (2+1)** | | | |  | | | | | | | | | | | | |
| **2. Course type** | | | | | | | | | | | | | | | | |
| **a.** | University | |  | | College | | | **√** | Department | | | |  | Others |  |  |
| **b.** | | Required | | | | **√** | Elective | | |  |  | | | | | |
| **3. Level/year at which this course is offered: 6th Level/ 3rd year** | | | | | | | | | | | |  | | | | |
| **4. Pre-requisites for this course** (if any)**:**  **Physical Pharmacy : (PHCU231)** | | | | | | | | | | | | | | | | |
| **5. Co-requisites for this course** (if any)**: None** | | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | |

## 6. Mode of Instruction (mark all that apply)

| **No** | **Mode of Instruction** | **Contact Hours** | **Percentage** |
| --- | --- | --- | --- |
| **1** | **Traditional classroom** | 60 | 100 |
| **2** | **Blended** |  |  |
| **3** | **E-learning** |  |  |
| **4** | **Correspondence** |  |  |
| **5** | **Other** |  |  |

**7. Actual Learning Hours** (based on academic semester)

|  |  |  |
| --- | --- | --- |
| **No** | **Activity** | **Learning Hours** |
| **Contact Hours** | | |
| **1** | **Lecture** | 30 |
| **2** | **Laboratory/Studio** | 30 |
| **3** | **Tutorial** | 0 |
| **4** | **Others** (specify) | 0 |
|  | **Total** | 60 |
| **Other Learning Hours\*** | | |
| **1** | **Study** | 30 |
| **2** | **Assignments** | 20 |
| **3** | **Library** | 0 |
| **4** | **Projects/Research Essays/Theses** | 0 |
| **5** | **Others** (specify) | 0 |
|  | **Total** | 50 |

**\*** The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

# B. Course Objectives and Learning Outcomes

|  |
| --- |
| 1. Course DescriptionThis course is designed to explain the different type of dosage forms as well as help students to understand the underlying concepts in formulation design of liquid dosage forms. The main topic cover in this course includes pharmaceutical solutions, preparation method, different type of pharmaceutical solutions and their use, pharmaceutical emulsions and suspensions. |
|  |
| 2. Course Main Objective  1. Study the introduction of different dosage forms, classification, and route of administration for different dosage form. 2. Understand prescription and dose calculation for child as well as adult. 3. Study concept of the liquid dosage forms, advantages and disadvantages, type of liquid dosage forms, preparation method and applications. Moreover, introduction to solid and semisolid dosage form as well as overview of novel drug delivery system are also included in this course. |
|  |

## 3. Course Learning Outcomes

| **CLOs** | | **Aligned****PLOs** |
| --- | --- | --- |
| 1 | **Knowledge:** |  |
| 1.1 | Outline the different dosage forms including traditional and Novel Drug Delivery System. | K3 |
| 1.2 | Describe the prescription processing. | K3 |
| 1.3 |  |  |
| 1... |  |  |
| **2** | **Skills :** |  |
| 2.1 | Prepare different oral liquid dosage forms such as syrups and solutions. | S1 |
| 2.2 | Calculate child dose using different equations. | S2 |
| 2.3 |  |  |
| 2... |  |  |
| **3** | **Competence:** |  |
| 3.1 | Work in group or individual using advancing technique in preparing liquid dosage forms. | C1 |
| 3.2 |  |  |
| 3.3 |  |  |
| 3... |  |  |

# C. Course Content

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | | **List of Topics** | **Contact Hours** |
| **Lectures** | | | |
| 1 | | General introduction about the pharmaceutics, pharmaceutical terms and definitions of all dosage forms. | 2 |
| 2 | | Classification of dosage forms and routes of administration of different dosage forms. | 2 |
| 3 | | Prescription and Calculation of dose for adult and children. | 2 |
| 4 | | Liquid Dosages Forms: Definition and types of liquid dosage form, solubility, formulation components of liquid dosage form. | 4 |
| 5 | | Pharmaceutical solution: preparation of solution, different types of solution used in pharmacy. | 2 |
| 6 | | Aqueous Solution  *Oral Solutions:* Preparations for Oral Solution, Syrup, Elixirs, Tinctures, Linctuses,Gargles And Mouth Washes. | 4 |
| 7 | | Aqueous Solution  *Topical Solutions andTinctures:*Sprays, Aluminum Acetate Topical Solution, Calcium Hydroxide Topical Solution, Hydrogen Peroxide Topical Solution, Povidone Iodine Topical Solution, Lotion, throat paint, Iodine tincture. | 4 |
| 8 | | Non-aqueous Solution  External liquid preparation instilled into body cavities | 2 |
| 9 | | Biphasic liquid dosage form: suspensions and emulsions official in pharmacopoeia | 2 |
| 10 | | Introduction to Novel Drug Delivery System (NDDS) | 2 |
| 11 | | Introduction to different types of semisolid dosage form, solid dosage form | 4 |
| **Total** | | | 30 |
| **Practicle** | | | |
| 1 | PHARMACEUTICAL CALCULATION  Arabic and Roman Numeral,Fraction and Decimal,  Ratio and Proportion, Percent concentration and Expression and  Dilution and Concentration. | | 2 |
| 2 | SYSTEM OF MEASUREMENT  The metric System, Apothecaries system, The Avoirdupois system,  The House hold system and Interconversions | | 2 |
| 3 | CHILD DOSE CALCULATION | | 2 |
| 4 | AROMATIC WATER  (1).Preparation of Camphor water B.P  (2). Preparation of Chloroform water | | 2 |
| 5 | IODINE SOLUTION  Preparation of iodine paint | | 2 |
| 6 | LOTION  Preparation of calamine lotion | | 2 |
| 7 | SYRUPS  Preparation of simple syrup | | 2 |
| 8 | PASTE  Preparation of zinc oxide paste | | 2 |
| 9 | OINTMENTS  (1). Preparation of white simple ointment  (2). Preparation of zinc oxide ointment | | 4 |
| 10 | **EMULSION**  (1). Preparation of emulsion from fixed oil by wet gum method.  (2). Preparation of emulsion from fixed oil by dry gum method.  (3). Preparation of emulsion from mineral oil by wet gum method.  (4). Preparation of emulsion from mineral oil by dry gum method. | | 8 |
| 11 | **REVISION** | | 2 |
| **Total** | | | 30 |

# D. Teaching and Assessment

## 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

| **Code** | **Course Learning Outcomes** | **Teaching Strategies** | **Assessment Methods** |
| --- | --- | --- | --- |
| **1.0** | **Knowledge** | | |
| 1.1 | Outline different dosage forms | Lectures | Theoretical Exam |
| 1.2 | Describe the concept of prescription processing. | Lectures | 1. Theoretical Exam 2. Assignments |
| … |  |  |  |
| **2.0** | **Skills** | | |
| 2.1 | Prepare different dosage forms and develop pre-formulation considerations for liquid dosage forms. | Lectures, Practical  Problems solving | 1. MCQs 2. Assignment 3. Observation Card |
| 2.2 | Demonstrate and operate the pharmaceutical equipment used in the preparation different dosage forms in the laboratory. | Lectures, Practical  Problems solving | 1. Assignment 2. Observation Card |
| … |  |  |  |
| **3.0** | **Competence** | | |
| 3.1 | Work in group or individual using different technique in preparing liquid dosage forms. | Lectures, Tutorials  Refer to Library and internet resources | 1.Practical exam  2.Oral discussion |
| 3.2 |  |  |  |
| … |  |  |  |

## 2. Assessment Tasks for Students

| **#** | **Assessment task\*** | **Week Due** | **Percentage of Total Assessment Score** |
| --- | --- | --- | --- |
| **1** | Quarterly Exam-1 | 6-7th | 15% |
| **2** | Quarterly Exam-2 | 10-11th | 15% |
| **3** | Assignments | 4-12th | 5% |
| **4** | Quiz (Practical) | 13th | 5% |
| **5** | Observation card | 14th | 5% |
| **6** | Practical Exam | 15th | 15% |
| **7** | Final Exam | 16-19th | 40% |
| **8** | Total |  | 100% |

**\*Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

# E. Student Academic Counseling and Support

|  |
| --- |
| **Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :**   * Office hours (5 hours per week+ appointments). * Tutorial session (problem solving and discussion 1 hour a week). |
|  |

# F. Learning Resources and Facilities

## 1.Learning Resources

|  |  |
| --- | --- |
| **Required Textbooks** | 1. Pharmaceutics: The science of dosage form design, edited by A.E. Aulton 2. Pharmaceutical Dispensing and Compounding: - J. Marriott, KA Wilson, CA Langley |
| **Essential References Materials** | 1. Pharmaceutics: Dosage form and design - David Jones 2. Pharmaceutical and Clinical Calculation - Mansoor A khan, Indira K Reddy. 3. Pharmaceutical Compounding and Dispensing - Chris Langley |
| **Electronic Materials** | 1. <https://sdl.edu.sa/SDLPortal/en/Publishers.aspx> 2. <http://dlaf.nu.edu.sa/en/e-libraries> 3. http://www.nu.edu.sa/en/web/deanship-of-libraries-affairs/85 4. <http://lib.nu.edu.sa/DigitalLibbrary.aspx> 5. <https://www.journals.elsevier.com/international-journal-of-pharmaceutics/> 6. <https://www.journals.elsevier.com/colloids-and-surfaces-b-biointerfaces> |
| **Other Learning Materials** | Computer-based programs/CD, professional standards or regulations and software. |

## 2. Facilities Required

| **Item** | **Resources** |
| --- | --- |
| **Accommodation**  (Classrooms, laboratories, demonstration rooms/labs, etc.) | 1. Suitable lecture room equipped with data show and internet access 2. Suitable labs equipped with health and safety tools. |
| **Technology Resources**  (AV, data show, Smart Board, software, etc.) | 1. Computer 2. Internet access 3. Data show |
| **Other Resources**  (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | 1. Mortar and Pestle 2. Mixers 3. Tablet Machine 4. Dosage forms such as tablets, capsules and emulsions 5. Disintegration tester |

# G. Course Quality Evaluation

| **Evaluation**  **Areas/Issues** | **Evaluators** | **Evaluation Methods** |
| --- | --- | --- |
| Effectiveness of teaching and assessment | Head of Department | Direct (group discussion) |
| Extent of achievement of course learning outcomes | Program Leaders | Indirect (course report) |
| Quality of learning resources | Students | Questionnaires |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Evaluation areas** (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

**Evaluators** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

**Assessment Methods** (Direct, Indirect)

# H. Specification Approval Data

|  |  |
| --- | --- |
| **Council / Committee** | Pharmaceutics Depertment Committee |
| **Reference No.** | 1Committee No |
| **Date** | 10/9/2019 |