



Course Specification

2023- 2024

Pharm D Program

Faculty of Pharmacy

Mansoura University



كلية الصيدلة
جامعة المنصورة

توصيف مقررات برنامج
بكالوريوس الصيدلة
لائحة فارم دي
2024/2023

Created By: Quality Assurance Unit



| <u>المستوى الخامس</u> | | | | |
|-----------------------|---|---------|-----|-----|
| 1 | Medical Microbiology | PM 515 | 690 | 712 |
| 2 | Clinical pharmacy I | PP 517 | 713 | 729 |
| 3 | Clinical Research, Pharmacoepidemiology and Pharmacovigilance | PP 518 | 730 | 743 |
| 4 | Pathology | MD 512 | 744 | 756 |
| 5 | Good Manufacturing Practice | PT 5110 | 757 | 773 |
| 6 | Drug Marketing & Pharmacoeconomics | NP 513 | 774 | 786 |
| 7 | Medicinal Chemistry III | PD 513 | 787 | 798 |
| 9 | Drug Design | PD 524 | 800 | 813 |
| 10 | Toxicology and Forensic Chemistry | PH 528 | 814 | 824 |
| 11 | First Aid | PH 529 | 825 | 834 |
| 12 | Research Methodology | NP 524 | 835 | 844 |
| 13 | Advanced Drug Delivery Systems | PT 5211 | 845 | 857 |
| 14 | Clinical Pharmacy II & Pharmacotherapeutics | PP 529 | 858 | 870 |
| 15 | Entrepreneurship | UR 525 | 871 | 881 |
| 16 | Public Health | PM 526 | 882 | 890 |
| 17 | Professional Ethics | NP 525 | 891 | 899 |



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Mansoura University



بكالوريوس الصيدلة (فارم دي - Pharm D)

Course Specification

Academic year: 2023/2024

| | |
|---|--|
| Course name: Medical Microbiology | اسم المقرر : الميكروبيولوجيا الطبية |
| Academic Level: level 5 | المستوى الأكاديمي : الخامس |
| Scientific department: Microbiology and Immunology | القسم العلمي : الميكروبيولوجي و المناعة |
| Head of Department: Prof. Dr. El-Sayd E. Habib | رئيس القسم: أ.د./ السيد الشربيني حبيب |
| Course Coordinator: Prof. Dr. Rasha Fathy Barwa | منسق المقرر : إ.د/ رشا محمد فتحى بروه |



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| | |
|---------------------------------------|------------------------------------|
| University | Mansoura |
| Faculty | Pharmacy |
| Department offering the course | Microbiology and Immunology |
| Department supervising the course | Microbiology and Immunology |
| Program on which the course is given | Bachelor in Pharmacy- Pharm D |
| Academic Level | Level 5, first semester, 2023-2024 |
| Date of course specification approval | 10/9/2023 |

A. Basic Information: Course data:

| | |
|--|----------------------|
| Course Title | Medical Microbiology |
| Course Code | PM 515 |
| Prerequisite | General Microbiology |
| Teaching credit Hours: Lecture | 2 |
| Teaching Credit Hours: Practical/ tutorial | 1 |
| Total Credit Hours | 3 |

B. Professional Information:

1. Course Aims:

On completion of the course, the student will be able to

To provide students with knowledge concerning etiology, pathogenesis and clinical manifestation of the most common bacteria and fungi causing infectious disease in human beings.

To enable students to understand the method of transmission of infectious diseases and diagnose disease based on clinical laboratory data

To describe the control measures and discuss the treatment of disease.

To enable students to understand the immunological diseases and disorders in immunity including hypersensitivity, immuno-deficiency disorders, autoimmunity and auto-immune diseases and organ transplantation.



2- Course k. elements:

Upon completing the course, the student will be able to dominate the following key elements

Domain 1- Fundamental Knowledge

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 1.1.1 | 1.1.1.1 | List the most common bacteria and fungi of medical importance. |
| 1.1.2 | 1.1.2.1 | Define terms related to medical microbiology. |
| 1.1.4 | 1.1.4.1 | Define suitable treatment of infectious diseases. |
| 1.1.5 | 1.1.5.1 | Describe and discuss the common infectious diseases caused by bacteria and fungi as pathogenesis, clinical pictures, and complications. |
| 1.1.6 | 1.1.6.1 | Outline methods of control of and prevention of common bacterial and fungal diseases. |
| 1.1.7 | 1.1.7.1 | Recognize the scientific basis of the conventional and up-to-date diagnostic procedures needed to carry out accurate diagnosis of bacterial and fungal and immunological diseases with emphasis on their prioritization in management plans. |

Domain 2: Professional and Ethical Practice

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 2.4.3 | 2.4.3.1 | Utilize systemic thinking and personal judgment for diagnosis of the hypersensitivity reactions. |
| 2.4.5 | 2.4.5.1 | Integrate the most important signs and symptoms of important bacterial and fungal diseases and the laboratory test findings into a meaningful diagnostic significance (using case study) |



| | | |
|-------|---------|---|
| | 2.4.5.2 | Express systemic thinking and personal judgment for differential diagnosis with prioritization of the common possibilities for each bacterial and fungal diseases |
| | 2.4.5.3 | Express systemic thinking and personal judgment for differential diagnosis of the immunological diseases and disorders. |
| 2.4.6 | 2.4.6.1 | Utilize diagnostic information in the management of infected patients and patients with immunological disorders. |

Domain 3: Pharmaceutical care

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|---|
| 3.1.1 | 3.1.1.1 | Outline the characters of immune-system in immunological disorders and organ transplantation. |
| 3.1.2 | 3.1.2.1 | Assign the methods of control and prevention of microbial infection as correlated to microbial transmission. |
| 3.1.3 | 3.1.3.1 | Record the growth on different media and perform laboratory tests for identification of the causative agents of infectious diseases |
| 3.1.4 | 3.1.4.1 | Utilize etiology, epidemiology, pathogenesis, laboratory diagnosis, and clinical features to suggest the proper preventive strategies for various infections. |
| 3.2.4 | 3.2.4.1 | Educate and counsel patients about causes and symptoms of autoimmune diseases and immunodeficiency disease. |
| 3.2.6 | 3.2.6.1 | Provide information to support community information regarding drug/agent causing hypersensitivity |

Domain 4: Personal Practice

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 4.1.1 | 4.1.1.1 | Share decision-making activities with other team members and apply effective time management skills. |



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| | | |
|-------|---------|---|
| 4.1.2 | 4.1.2.1 | Demonstrate effective teamwork in analyzing information, identify and solve problems. |
| 4.2.1 | 4.2.1.1 | Use clear language and communication when dealing with patients and other health team and communities |
| 4.3.2 | 4.3.2.1 | Commit self-development and self-learning |

3- Course Contents

| Week No. | Lecture topics | Lecture credit Hours |
|----------|--|----------------------|
| 1 | Introduction: Pathogenesis of bacterial infection and virulence factors Lactose fermenter Gram negative bacilli: E. coli | 2 |
| 2 | Lactose fermenter Gram negative bacilli: Klebsiella Non lactose fermenter Gram negative bacilli: Salmonella and Proteus | 2 |
| 3 | Non lactose fermenter Gram negative bacilli: Sigella- Yersinia and Pseudomonas | 2 |
| 4 | Gram positive cocci: Staphylococci and hemolytic streptococci | 2 |
| 5 | Gram positive cocci: Non Hemolytic streptococci Acid fast bacteria: Mycobacterium tuberculosis and Mycobacterium leprae | 2 |
| 6 | Cocci bacilli bacteria: Haemophilus influenzae, Bordetella pertussis- Brucella | 2 |
| 7 | Spore forming aerobic bacilli: Bacillus species Spore forming anaerobic bacilli: Clostridium (anaerobic) species | 2 |
| 8 | Non Spore forming bacilli: Corynebacterium and Listeria Curved and comma shape Gram negative bacteria: Vibrio and Helicobacter Cell wall less bacteria: Mycoplasma | 2 |
| 9 | Gram-negative diplococci: Neisseria | 2 |



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|----------|--|------------------------|
| | Obligate intracellular bacteria: Rickettsia, Chlamydia, Coxiella | |
| 10 | Spirochetes: Treponema pallidum Fungal diseases: Superficial, cutaneous, subcutaneous, and systemic disease | 2 |
| 11 | Immunological diseases: Autoimmunity and auto-immune diseases and organ transplantation. | 2 |
| 12 | Immunological disorders: Hypersensitivity | 2 |
| 13 | Immunological diseases: immune-deficiency disorders | 2 |
| 14 | Revision/quiz | 2 |
| 15 | Start of Final written and oral exam | |
| Week No. | Practical topics | Practical credit hours |
| 1 | Introduction, Differential media, streaking for isolation | 1 |
| 2 | Lab methods for diagnosis of E. coli | 1 |
| 3 | Lab methods for diagnosis of Klebsiella and Proteus | 1 |
| 4 | Lab methods for diagnosis of Pseudomonas | 1 |
| 5 | Lab methods for diagnosis of Shigella and Salmonella | 1 |
| 6 | Identification of unknown Gram negative rods | 1 |
| 7 | Lab methods for diagnosis of Staphylococci | 1 |
| 8 | Midterm exam | - |
| 9 | Lab methods for diagnosis of Helicobacter | 1 |
| 10 | Lab methods for diagnosis of Streptococci | 1 |
| 11 | Lab methods for diagnosis of Brucella | 1 |
| 12 | Identification of unknown Gram positive cocci | 1 |
| 13 | Lab methods for Fungi identification | |
| 14 | Practical exam | |



4- Teaching and Learning Methods:

| No | Teaching and Learning Methods | week | K. elements to be addressed |
|-----|--|---------------|---|
| 4.1 | Advanced lecture | 1-14 | (1.1.1.1), (1.1.2.1), (1.1.4.1), (1.1.5.2), (1.1.6.1), (1.1.7.1), (2.4.3.1), (2.4.5.1), (2.4.5.2), (2.4.5.3), (2.4.6.1), (3.1.1.1), (3.1.2.1), (3.1.3.1) (3.1.4.1), (3.2.1.1), (3.2.6.1), (4.2.1.1) |
| 4.2 | Distance learning: On line learning through My mans "Mansoura university " | 1-14 | (1.1.1.1), (1.1.2.1), (1.1.4.1), (1.1.5.2), (1.1.6.1), (1.1.7.1), (2.4.3.1), (2.4.5.1), (2.4.5.2), (2.4.5.3), (2.4.6.1), (3.1.1.1), (3.1.2.1), (3.1.3.1) (3.1.4.1), (3.2.1.1), (3.2.6.1), (4.2.1.1) |
| 4.3 | Practical works and tutorials | 1-14 | (1.1.1.1), (1.1.2.1), (1.1.4.1), (1.1.5.1), (1.1.6.1), (1.1.7.1), (2.4.5.1), (2.4.5.1), (2.4.5.2), (2.4.6.1), (2.4.6.2), (3.1.1.1) |
| 4.4 | Self-learning | 13 | (4.1.1.1), (4.1.2.1), (4.2.1.1), (4.3.2.1) |
| 4.5 | Collaborative learning: Research Project | 1-10 | (1.1.4.1), (1.1.5.2), (1.1.6.1), (1.1.7.1), (2.4.5.1), (2.4.5.2), (2.4.6.1), (3.1.2.1), (3.1.3.1) (3.1.4.1), (4.1.1.1), (4.1.2.1), (4.2.1.1) |
| 4.6 | collaborative learning: Role play | 2,4,5,7, 8 | (1.1.4.1), (1.1.5.2), (1.1.6.1), (1.1.7.1), (2.4.5.1), (2.4.5.2), (2.4.6.1), (3.1.2.1), (3.1.3.1) (3.1.4.1), (4.1.1.1), (4.1.2.1), (4.2.1.1) |
| 4.7 | Case study | 1-5 & 7-9 | (1.1.4.1), (1.1.5.2), (1.1.6.1), (1.1.7.1), (2.4.5.1), (2.4.5.2), (2.4.6.1), (3.1.2.1), (3.1.3.1) (3.1.4.1), (4.1.1.1), (4.1.2.1), (4.2.1.1) |
| 4.8 | Reciprocal /flipped teaching التدريس التبادلي | 3 | (1.1.4.1), (1.1.5.2), (1.1.6.1), (1.1.7.1), (2.4.3.1), (2.4.5.1), (2.4.5.2), (2.4.5.3), (2.4.6.1), (3.1.2.1), (3.1.3.1), (3.1.4.1), (4.2.1.1) |



| | | | |
|-----|------------------------|------|---|
| 4.9 | العروض التوضيحية Demos | 1-13 | (1.1.4.1), (1.1.5.2), (1.1.6.1), (1.1.7.1), (2.4.3.1), (2.4.5.1), (2.4.5.2), (2.4.5.3), (2.4.6.1), (3.1.1.1), (3.1.2.1), (3.1.3.1) (3.1.4.1), (3.2.1.1), (3.2.6.1), (4.2.1.1) |
|-----|------------------------|------|---|

5- Student Assessment:

Assessment Methods:

| | |
|---|--|
| 1- Periodical (Mid-term exam) / Course work | (1.1.1.1), (1.1.2.1), (1.1.4.1), (1.1.5.1), (1.1.6.1), (1.1.7.1), (2.4.5.1), (2.4.5.2), (2.4.6.1), (3.1.2.1), (3.1.3.1), (3.1.4.1) |
| 2-Practical exam using OSPE | (1.1.7.1), (2.4.5.1), (2.4.5.2), (3.1.2.1), (3.1.3.1) (3.1.4.1) |
| 3-Written exam | (1.1.1.1), (1.1.2.1), (1.1.4.1), (1.1.5.2), (1.1.6.1), (1.1.7.1), (2.4.3.1), (2.4.5.1), (2.4.5.2), (2.4.5.3), (2.4.6.1), (3.1.1.1), (3.1.2.1), (3.1.3.1) (3.1.4.1), (3.2.1.1), (3.2.6.1) |
| 4-Oral | (1.1.1.1), (1.1.2.1), (1.1.4.1), (1.1.5.2), (1.1.6.1), (1.1.7.1), (2.4.5.1), (2.4.5.2), (2.4.5.3), (3.1.1.1), (3.1.2.1), (3.1.3.1) (3.1.4.1), (3.2.1.1), (4.2.1.1) |

Assessment schedule

| | | |
|------------------|--|-----------------------|
| Assessment 1 | Periodical (Mid-term exam)/Course work | 7th week |
| Assessment 2 | Practical applying OSPE | 12th week |
| Assessment 3 | Written | Start from 14 th week |
| Assessment 4 | Oral | Start from 14 th week |
| Other assessment | | |

Weighing of assessments

| | | |
|-------|--|------|
| 1 | Periodical (Mid-term exam)/Course work | 15% |
| 2 | Practical examination & tutorial | 25% |
| 3 | Final-term examination | 50% |
| 4 | Oral examination | 10% |
| Total | | 100% |



6- Facilities required for teaching and learning

| | |
|-----------------------|--|
| Classroom | Data show- Computers, sound system-Internet, Platform |
| Laboratory facilities | Media- Sterile tools- chemical reagent- Data show- Computers, Internet, Platform |
| Library | Books |

7- List of References

| No | Reference | Type |
|----|---|----------------|
| 1. | Electronic book prepared by staff members | eBook |
| 2 | Cornelissen, C. N., Fisher, B. D., Harvey, R. A., & Harvey, R. A. (2013). Lippincott's illustrated reviews: Microbiology. 3rd edition, Philadelphia: Lippincott Williams & Wilkins. | Essential Book |
| 3. | Surinder Kumar (2016): Essentials of Microbiology. First Edition. Jaypee Brothers Medical Publishers | eBook |
| 4. | Levinson, W. (2014). Review of Medical microbiology & immunology Thirteenth Edition | eBook |
| | Sherris & Ryan,s (2022): Medical microbiology. Eighteenth edotion, McGraw Hill | eBook |
| 5. | http://www.sciencedirect.com/ http://www.google.com/ http://www.pubmed.com Centers for Disease Control and Prevention. https://0810fd8j4-1104-y-https-www-clinicalkey-com.mplbci.ekb.eg/#!/content/3-s2.0-B9780323673204000523 https://0810ed95d-1104-y-https-onlinelibrary-wiley-com.mplbci.ekb.eg/doi/chapterepub/10.1002/9781119998648.ch15 https://0810fd8jd-1104-y-https-www-clinicalkey-com.mplbci.ekb.eg/service/content/pdf/watermarked/3-s2.0-B9780323930383002318.pdf?locale=en_US&searchIndex= | Websites |



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| | https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4600970/ | |
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8- Matrix

Course content and key element

| Course contents / K. elements | Domain : 1 | | | | | | Domain 2 | | | | | Domain: 3 | | | | | | Domain: 4 | | | | |
|---|------------|---------|---------|---------|---------|---------|----------|---------|---------|---------|---------|-----------|---------|---------|---------|---------|---------|-----------|---------|---------|---------|--|
| | 1.1.1.1 | 1.1.2.1 | 1.1.4.1 | 1.1.5.1 | 1.1.6.1 | 1.1.7.1 | 2.4.3.1 | 2.4.5.1 | 2.4.5.2 | 2.4.5.3 | 2.4.6.1 | 3.1.1.1 | 3.1.2.1 | 3.1.3.1 | 3.1.4.1 | 3.2.4.1 | 3.2.6.1 | 4.1.1.1 | 4.1.2.1 | 4.2.1.1 | 4.3.2.1 | |
| Introduction: Pathogenesis of bacterial infection and virulence factors | √ | √ | √ | √ | √ | √ | | √ | √ | | | | √ | √ | √ | | | | √ | √ | √ | |
| Lactose fermenter Gram negative rode: E. coli | | | | | | | | | | | | | | | | | | | | | | |
| Lactose fermenter Gram negative | | | √ | √ | √ | √ | | √ | √ | | | √ | √ | √ | | | | √ | √ | √ | | |



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|--|--|--|---|---|---|---|--|---|---|--|---|--|--|--|--|--|---|---|---|
| rod: Klebsiella Non lactose fermenter Gram negative rod: Salmonella and Proteus | | | | | | | | | | | | | | | | | | | |
| Non lactose fermenter Gram negative rod: Sigella- Yersinia and Pseudomonas | | | √ | √ | √ | √ | | √ | √ | | √ | | | | | | √ | √ | √ |
| Gram positive cocci: Staphylococci and non-hemolytic streptococci | | | √ | √ | √ | √ | | √ | √ | | √ | | | | | | √ | √ | √ |
| Gram positive cocci: Hemolytic streptococci | | | √ | √ | √ | √ | | √ | √ | | √ | | | | | | √ | √ | √ |



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|---|--|---|---|---|---|--|---|---|--|---|--|---|---|---|--|--|---|---|---|
| Acid fast bacteria: Mycobacterium tuberculosis and Mycobacterium leprae | | | | | | | | | | | | | | | | | | | |
| Cocccobacilli bacteria: Haemophilus influenzae, Bordetella pertussis- Brucella and Acinetobacter | | √ | √ | √ | √ | | √ | √ | | √ | | √ | √ | √ | | | √ | √ | √ |
| Spore forming aerobic bacilli: Bacillus species | | | | | | | | | | | | | | | | | | | |
| Spore forming anaerobic bacilli: Clostridium (anaerobic) | | √ | √ | √ | √ | | √ | √ | | √ | | √ | √ | √ | | | √ | √ | √ |



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|--|--|--|---|---|---|---|--|---|---|--|---|--|---|---|---|--|--|---|---|---|
| species | | | | | | | | | | | | | | | | | | | | |
| Non Spore forming bacilli: Corynebacterium and Listeria | | | | | | | | | | | | | | | | | | | | |
| Curved and comma shape Gram negative bacteria: Vibrio, Campylobacter, and Helicobacter | | | √ | √ | √ | √ | | √ | √ | | √ | | √ | √ | √ | | | √ | √ | √ |
| Cell wall less bacteria: Mycoplasma | | | | | | | | | | | | | | | | | | | | |
| Gram-negative diplococcic: Neisseria | | | √ | √ | √ | √ | | √ | √ | | √ | | √ | √ | √ | | | √ | √ | √ |
| Obligate intracellular bacteria: | | | | | | | | | | | | | | | | | | | | |



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|--|--|---|---|---|---|---|--|---|---|---|---|--|---|---|---|---|---|---|---|---|
| Rickettsia, Chlamydia, Coxiella | | | | | | | | | | | | | | | | | | | | |
| Spirochetes: Treponema pallidum | | | | | | | | | | | | | | | | | | | | |
| Fungal diseases: Superficial, cutaneous, subcutaneous, and systemic disease | | √ | √ | √ | √ | | | √ | √ | | √ | | √ | √ | √ | | | √ | √ | √ |
| Immunological diseases: Autoimmunity and auto-immune diseases and organ transplantation. | | | | | √ | | | | √ | √ | √ | | | | √ | | | √ | √ | √ |
| Immunological disorders: | | | | | √ | √ | | | √ | √ | √ | | | | | √ | √ | √ | √ | |



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|---|--|--|--|--|---|--|--|---|---|---|---|--|--|---|---|---|--|---|---|---|---|---|
| Hypersensitivity | | | | | | | | | | | | | | | | | | | | | | |
| Immunological diseases: immune-deficiency disorders | | | | | √ | | | | √ | √ | √ | | | | √ | | | √ | √ | √ | √ | |
| B) Practical part | | | | | | | | | | | | | | | | | | | | | | |
| Introduction, Differential media, streaking for isolation | | | | | √ | | | | | | | | | | √ | | | | | √ | | |
| Lab methods for diagnosis of E. coli | | | | | √ | | | √ | √ | | | | | √ | √ | √ | | | | √ | √ | √ |
| Lab methods for diagnosis of Klebsiella and Proteus | | | | | √ | | | | √ | | | | | | √ | | | | | | √ | |



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|--|--|--|--|--|---|--|--|---|---|--|--|--|---|---|---|--|--|---|---|---|---|
| Lab methods for diagnosis of Pseudomonas | | | | | √ | | | √ | √ | | | | √ | √ | √ | | | √ | √ | √ | |
| Lab methods for diagnosis of Shigella and Salmonella | | | | | √ | | | √ | √ | | | | √ | √ | √ | | | √ | √ | √ | |
| Identification of unknown Gram negative rode | | | | | √ | | | | √ | | | | | √ | | | | √ | √ | | √ |
| Lab methods for diagnosis of Staphylococci | | | | | √ | | | √ | √ | | | | √ | √ | √ | | | √ | √ | √ | |
| Lab methods for diagnosis of Helicobacter | | | | | | | | | | | | | | | | | | | | | |
| Lab methods for diagnosis of Streptococci | | | | | √ | | | √ | √ | | | | √ | √ | √ | | | √ | √ | √ | |



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|---|--|--|--|--|---|--|--|---|--|--|--|--|---|--|--|--|---|---|---|---|
| Identification of unknown Gram positive cocci | | | | | √ | | | √ | | | | | √ | | | | √ | √ | | √ |
| Lab methods for Fungi identification | | | | | √ | | | √ | | | | | √ | | | | | | √ | |
| Revision | | | | | √ | | | √ | | | | | √ | | | | | √ | √ | |



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Matrix 2. Between course contents, learning methods and assessment

| A) Theoretical Part: | | | | | | | | | | | | | |
|---|-------------------------------|------------------|---------------|--|-----------------------------------|------------|------------------|-------------------------|----------------------------|----------------------------|-----------------|---------|------|
| Course Contents | Teaching and Learning Methods | | | | | | | | Assessment methods | | | | |
| | Advanced lecture | On line learning | Self-learning | Collaborative learning: Research Project | Collaborative learning: Role play | Case study | Flipped teaching | المعروض التوضيحية Demos | Course work (presentation) | Course Work mid-term Exam) | Practical/sheet | Written | Oral |
| Introduction : Pathogenesis of bacterial infection and virulence factors | ✓ | | | ✓ | | | | ✓ | ✓ | ✓ | | ✓ | ✓ |
| Lactose fermenter Gram negative rode: E. coli | | | | | | | | | | | | | |
| Lactose fermenter Gram negative rode: Klebsiella | | | | ✓ | | | | ✓ | ✓ | ✓ | | ✓ | ✓ |
| Non lactose fermenter Gram negative rode: Salmonella and Proteus | ✓ | | | | | ✓ | | | | | | ✓ | ✓ |



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| | | | | | | | | | | | | |
|--|---|--|---|--|---|---|---|---|---|--|---|---|
| Non lactose fermenter Gram negative rode: Sigella- Yersinia and Pseudomona s | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ |
| Gram positive cocci: Staphylococ ci and non- hemolytic streptococci | ✓ | | ✓ | | ✓ | | ✓ | ✓ | ✓ | | ✓ | ✓ |
| Gram positive cocci: Haemolytic streptococci Acid fast bacteria: Mycobacteri um tuberculosis and Mycobacteri um leprae | ✓ | | ✓ | | | | ✓ | ✓ | | | ✓ | ✓ |
| Coccobacilli bacteria: Haemophilu s influenzae, Bordetella pertussis- Brucella and Acinetobact er | ✓ | | ✓ | | | | ✓ | ✓ | | | ✓ | ✓ |



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|---|---|---|---|--|---|---|---|---|--|---|---|
| Spore forming aerobic bacilli: Bacillus species | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ |
| Spore forming anaerobic bacilli: Clostridium (anaerobic) species | | | | | ✓ | | | | | | |
| Non Spore forming bacilli: Corynebacterium and Listeria | | | | | | | | | | | |
| Curved and comma shape Gram negative bacteria: Vibrio, Campylobacter, and Helicobacter | ✓ | | ✓ | | ✓ | | ✓ | ✓ | | ✓ | ✓ |
| Cell wall less bacteria: Mycoplasma | | | | | | | | | | | |



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|--|---|---|---|--|--|--|--|--|--|---|--|--|--|---|---|
| Immunological diseases: immune-deficiency disorders. | ✓ | ✓ | ✓ | | | | | | | ✓ | | | | ✓ | ✓ |
|--|---|---|---|--|--|--|--|--|--|---|--|--|--|---|---|

B) Practical Part:


| Course Contents | Teaching and Learning Methods | | | | | | | | | | Assessment methods | | |
|---|-------------------------------|------------------|---------------|--|----------------------------|-----------------------------------|------------|------------------|------------------------|------------|--------------------|----------------|--|
| | Practical works and tutorials | On line learning | Self-learning | Collaborative learning: Research Project | Research Project learning: | Collaborative learning: Role play | Case study | Flipped teaching | العروض التوضيحية Demos | Corse Work | Sheet | Practical exam | |
| Introduction, Differential media, streaking for isolation | ✓ | ✓ | | | | | | | | ✓ | ✓ | ✓ | |
| Lab methods for diagnosis of E. coli | ✓ | ✓ | | | | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | |
| Lab methods for diagnosis of Klebsiella and Proteus | ✓ | ✓ | | | | | | | ✓ | ✓ | ✓ | ✓ | |
| Lab methods for diagnosis of Pseudomonas | ✓ | ✓ | | | | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | |
| Lab methods for diagnosis of Shigella and Salmonella | ✓ | ✓ | | | | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | |



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|---|---|---|--|--|---|---|--|---|---|---|---|
| Identification of unknown Gram negative rods | ✓ | ✓ | | | | | | | ✓ | ✓ | ✓ |
| Lab methods for diagnosis of Staphylococci | ✓ | ✓ | | | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |
| Lab methods for diagnosis of Helicobacter | | | | | | | | | | | |
| Lab methods for diagnosis of Streptococci | ✓ | ✓ | | | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |
| Identification of unknown Gram positive cocci | ✓ | ✓ | | | | | | ✓ | ✓ | ✓ | ✓ |
| Lab methods for Fungi identification | ✓ | ✓ | | | | | | ✓ | ✓ | ✓ | ✓ |
| Revision | ✓ | ✓ | | | | | | | ✓ | | |

| | |
|--------------------|---|
| Course Coordinator | Prof. Dr. Rasha Fathy Barwa |
| Head of Department | Prof. Dr. El-Sayed E. Habib  |

Date: 10/9/ 2023



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بكالوريوس الصيدلة (فارم د – Pharm D)

Course Specification

Academic year: 2023/2024

| | |
|--|--|
| Course name: Clinical pharmacy 1 | اسم المقرر: صيدلية إكلينيكية 1 |
| Academic Level: 5 | المستوى الأكاديمي: الخامس |
| Scientific department: Clinical Pharmacy and Pharmacy Practice | القسم العلمي: الصيدلة الإكلينيكية والممارسة الصيدلانية |
| Head of Department: Prof. Mohammed El-Houseiny Shams | رئيس القسم: أ.د/ محمد الحسيني شمس |
| Course Coordinator: Dr. Mona Mohammed Eltamalawy | منسق المقرر: د.منى محمد فتحي الطملاوي |



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| | |
|---------------------------------------|--|
| University | Mansoura |
| Faculty | Pharmacy |
| Department offering the course | Clinical Pharmacy and Pharmacy Practice |
| Department supervising the course | Clinical Pharmacy and Pharmacy Practice |
| Program on which the course is given | Bachelor in Pharmacy-Pharm D by law |
| Academic Level | Fifth level, first semester, 2022-2023 |
| Date of course specification approval | 7 th September 2023 |

A. Basic Information: Course data:

| | |
|---------------------------------|---------------------|
| Course Title | Clinical pharmacy 1 |
| Course Code | PP 517 |
| Prerequisite | Pharmacology 1 |
| Teaching Hours: Lecture | 2 |
| Teaching Credit Hours: Tutorial | 1 |
| Total Credit Hours | 3 (Credit H) |

B. Professional Information:

1. Course Aims:

This course aims to:

- Introduce the students to the concept of clinical pharmacy such as; patient history taking, medication reconciliation, therapeutic planning and drug-related problems.
- Make the students aware of clinical laboratory data interpretation and physical examination.
- Introduce the principles of special care population (geriatric, pediatric, renal and hepatic patient obesity, pregnancy and lactation).
- The course also introduces the student to the principles of management and supportive care of some diseases such as oncological diseases, blood disorders and nutritional deficiency.



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2.Course k. elements:

Upon completing the course, the student will be able to dominate the following key elements

Domain 1- fundamental knowledge

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|---|
| 1.1.1 | 1.1.1.1 | Describe the role of clinical pharmacist, management of hepatic and renal patients, and interpretation of clinical laboratory data. |
| | 1.1.1.2 | Outline principles of special populations pharmaceutical care such as pediatric, geriatric, pregnancy and lactation. |
| 1.1.4 | 1.1.4.1 | Illustrate the aspects of clinical support in cancer patients. |
| 1.1.5 | 1.1.5.1 | Design an individualized optimum therapeutic plan for management of blood clot. |

Domain 2: professional and ethical practice

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 2.4.3 | 2.4.3.1 | Solve any identified chemotherapy-related problems and improve pharmaceutical care & design a proper anticoagulant plan for treatment and prophylaxis of deep venous thrombosis. |

Domain 3: pharmaceutical care

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 3.2.2 | 3.2.2.1 | Utilize the principles of clinical pharmacology and updated guidelines for designing therapeutic care plan for anemia and obesity. |
| 3.2.5 | 3.2.5.1 | Practice professional patient counseling to optimize outcomes of pharmaceutical care plan. |
| 3.2.7 | 3.2.7.1 | Detection of adverse drug reactions, classification of adverse drug reaction, and reporting system. |

Domain 4: personal practice

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|-------------------|
| | | |



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| | | |
|-------|---------|---|
| 4.1.1 | 4.1.1.1 | Co-operate with other healthcare team in decision making activities and work as integrated part of healthcare team. |
| 4.3.2 | 4.3.2.1 | Practice self-learning on selected topics to improve professional skills |

3. Course Contents

| Week No. | Topics | Hours |
|----------|--|-------|
| 1 | Blood Disorders: Blood Clot <ul style="list-style-type: none"> • Clot formation. • Clinical presentation of Deep Venous Thrombosis (DVT) & Pulmonary Embolism (PE) • Clotting Cascade. • Anticoagulants. (IV) • Heparin Induced Thrombocytopenia | 2 |
| 2 | Blood Disorders: Blood Clot <ul style="list-style-type: none"> • Oral Anticoagulants • Purple Toe Syndrome. • Clinical Use of Anticoagulant: 1-Treatment of DVT in outpatients | 2 |
| 3 | Blood Disorders: Blood Clot <ul style="list-style-type: none"> • Clinical Use of Anticoagulant: <ul style="list-style-type: none"> 2- Stroke prevention in atrial fibrillation. 3- VTE Prophylaxis in surgical patients 4- Venous Thromboembolism Prophylaxis in Critical ill patients. • Bleeding Risk Assessment • Reversal of Anticoagulants. | 2 |
| 4 | Pregnancy and lactation <ul style="list-style-type: none"> • Pharmacokinetic changes in pregnancy. • Pharmacodynamic changes in pregnancy. | 2 |
| 5 | Pregnancy and lactation <ul style="list-style-type: none"> • Placental Transfer of Drugs • Pregnancy and Drug Use. • Patient Counseling Regarding Social Drugs. | 2 |
| 6 | Pediatric <ul style="list-style-type: none"> • Factors Affecting Pediatric Therapy Effect of pharmacokinetic and pharmacodynamic differences on drug. • Examples of Common Clinical Disorders in Pediatrics: <ul style="list-style-type: none"> 1- Acute Otitis Media. 2- Pharyngitis. | 2 |
| 7 | Geriatrics <ul style="list-style-type: none"> • <i>Pharmacokinetic age-related changes.</i> | 2 |



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| | | |
|------------------|---|---|
| | <ul style="list-style-type: none"> • <i>Pharmacodynamic age-related changes.</i> • <i>Common Clinical Disorders</i> • <i>Principles and Goals of Drug Therapy in the Elderly</i> | |
| 8 | Supportive Care in Oncology <ul style="list-style-type: none"> • <i>Myelosuppression: Neutropenia, Anemia, Thrombocytopenia</i> • <i>Chemotherapy-Induced Nausea and Vomiting (CINV)</i> • <i>Tumor Lysis Syndrome</i> • <i>Oral Mucositis</i> | 2 |
| 9 | Fluids <ul style="list-style-type: none"> • <i>Distribution of Total Body Fluids</i> • <i>Fluid Resuscitation in ICU</i> | 2 |
| 10 | Electrolytes <ul style="list-style-type: none"> • <i>Hyponatremia</i> • <i>Hypernatremia</i> • <i>Hypokalemia</i> Acid -Base Disorders <ul style="list-style-type: none"> • <i>Metabolic Acidosis</i> • <i>Metabolic Alkalosis</i> • <i>Respiratory Alkalosis</i> | 2 |
| 11 | Clinical Pharmacy <ol style="list-style-type: none"> 1. <i>Prescription monitoring.</i> 2. <i>Prescribing advice to medical and nursing staff.</i> 3. <i>Medication errors and adverse drug reaction reporting.</i> 4. <i>Medication history-taking and medicines reconciliation.</i> 5. <i>Patient education and counselling.</i> 6. <i>Pharmacokinetics and therapeutic drug level monitoring.</i> 7. <i>Personalized medicine</i> 8. <i>Education and training</i> 9. <i>Medicines formularies</i> 10. <i>Clinical outcomes</i> 11. <i>Professional and clinical audit</i> | 2 |
| 12 | Patient History Taking <ul style="list-style-type: none"> • <i>Drug Use Process.</i> • <i>Relevant patient details</i> • <i>History Taking Template</i> | 2 |
| 13 | Patient Management Approach <ul style="list-style-type: none"> • <i>Pharmaceutical Care</i> • <i>Drug Therapy Problem</i> | 2 |
| 14 | Anemia (Self-learning) and revision | 2 |
| 15 th | Final written and oral exam | |

| Week No. | Tutorial topics | hours |
|----------|-------------------|-------|
| 1 | Case Presentation | 1 |



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| | | |
|----|--|---|
| 2 | Anticoagulants: • Clinical Use of Heparin & Enoxaparin • Case study | 1 |
| 3 | Anticoagulants: • Warfarin | 1 |
| 4 | Anticoagulants: • Treatment & Prophylaxis of DVT | 1 |
| 5 | Case study: Acute Otitis Media | 1 |
| 6 | Case study: Pharyngitis | 1 |
| 7 | Case study: Supportive care in oncology | 1 |
| 8 | Midterm exam | - |
| 9 | Case study: Fluids. | 1 |
| 10 | Case study: Electrolytes. | 1 |
| 11 | Case Study: Obtaining a Patient History | 1 |
| 12 | Management of Paracetamol Overdose with Acetylcysteine | 1 |
| 13 | Drug Interaction | 1 |
| 14 | Tutorial exam | - |

4. Teaching and Learning Methods:

| | Teaching and Learning Methods | Week | k. elements to be addressed |
|-----|--|-------------|--|
| 4.1 | Computer aided learning: a. Advanced Lectures using Power Point presentations and group discussion . b. Distance learning • On line learning through my mans "Mansoura university "as recorded – video lectures • Inter active discussion through My Mans | 1-14 | 1.1.1.1/1.1.1.2/ 1.1.4.1/1.1.5.1/ 2.4.3.1 |
| 4.2 | Tutorial session | 1-14 | 3.2.2.1 /3.2.5.1/3.2.7.1/ 4.1.1.1/ 4.3.2.1 |
| 4.3 | Self-learning | 14 | 4.1.1.1/ 4.3.2.1 |
| 4.4 | Class Activity: Group discussion | 1-14 | 4.1.1.1/ 4.3.2.1 |
| 4.5 | Case study | 1-14 | 4.1.1.1/ 4.3.2.1 |



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5. Student Assessment:

a- Assessment Methods:

| | |
|---|--|
| 1-Written exam | 1.1.1.1/ 1.1.1.2/1.1.4.1/1.1.5.1/2.4.3.1 |
| 2- Tutorial (sheet) exam | 3.2.2.1 /3.2.5.1/3.2.7.1/4.1.1.1/ 4.3.2.1 |
| 3-Oral | 1.1.1.1/1.1.1.2/1.1.4.1/1.1.5.1/2.4.3.1/3.2.2.1/3.2.5.1/3.2.7.1/4.1.1.1/ 4.3.2.1 |
| 4-Periodical (Mid-term exam) / Course work | 1.1.1.1/ 1.1.1.2/1.1.4.1/1.1.5.1/2.4.3.1 |

b- Assessment schedule

| | | |
|---------------------|---|-------------------------------------|
| Assessment 1 | Periodical (Mid-term exam) / Course work | 7-9 th week |
| Assessment 2 | Tutorial (sheet) | 14 th week |
| Assessment 3 | Written exam | Starting from 15 th week |
| Assessment 4 | Oral exam | Starting from 15 th week |

c- Weighing of assessments

| | | |
|--------------|--|-------|
| 1 | Mid-term examination / Class work | 15% |
| 2 | Tutorial (sheet) examination | 25 % |
| 3 | Final-term examination | 50% |
| 4 | Oral examination | 10% |
| 5 | Other types of assessment | ----- |
| Total | | 100% |

6. Facilities required for teaching and learning

| | |
|------------------------------|---|
| Classroom | Data show- Computers, Internet, Platform |
| Laboratory facilities | Data show – computers, internet, round tables |
| Library | Reference books |

7. List of References

| No | Reference | Type |
|----|---|----------------|
| 1. | Lecture notes prepared by teaching professors | Course |
| 2. | Joseph T. DiPiro, Gary C. Yee, L. Michael Posey, <i>et al.</i> A Pathophysiologic Approach, Eleventh Edition. Nolin Published: June 2020 | Essential Book |
| 3 | Karen Shapiro, Bombatch C.,Garrett S. D, Veverka A., Brian S., Davis C., Drew A., Wellings F.. NAPLEX Course Book 2022 edition. USA. RxPREP, Inc.,2022. | Essential Book |



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|---|--|----------------|
| 4 | H. Matt, V.Andrea, F. Annette, <i>et al.</i> Applied Therapeutics. The Clinical Use of Drugs. Eleventh edition. USA. Wolters Kluwer. 2018 | Essential Book |
| 5 | Marie A. Chisholm-Burns, et al. Pharmacotherapy Principles & Practice Fourth edition 2016 | Essential Book |
| 6 | http://www.ekb.eg http:// www.sciencedirect www.pubmed.com http://www.google scholar.com | websites |



7. Matrix of knowledge and skills of the course

A- Theoretical Part

| Course contents | Outcomes | | | | | | | | | |
|--|----------|---------|---------|---------|----------|----------|---------|---------|----------|---------|
| | Domain 1 | | | | Domain 2 | Domain 3 | | | Domain 4 | |
| | 1.1.1.1 | 1.1.1.2 | 1.1.4.1 | 1.1.5.1 | | 2.4.3.1 | 3.2.2.1 | 3.2.5.1 | 3.2.7.1 | 4.1.1.1 |
| Blood Disorders: Blood Clot <ul style="list-style-type: none"> • Clot formation. • Clinical presentation of Deep Venous Thrombosis (DVT) & Pulmonary Embolism (PE) • Clotting Cascade. • Anticoagulants. (IV) • Heparin Induced Thrombocytopenia | √ | | | √ | √ | | √ | √ | | |
| Blood Disorders: Blood Clot <ul style="list-style-type: none"> • Oral Anticoagulants • Purple Toe Syndrome. • Clinical Use of Anticoagulant: 1- Treatment of DVT in outpatients. | √ | | | √ | √ | | √ | √ | | |
| Blood Disorders: Blood Clot | √ | | | √ | √ | | √ | | | |



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|---|--|---|--|--|--|--|--|---|---|--|--|--|--|
| <ul style="list-style-type: none"> • <i>Clinical Use of Anticoagulant:</i> • 2- <i>Stroke prevention in atrial fibrillation.</i> • 3- <i>VTE Prophylaxis in surgical patients</i> • 4- <i>Venous Thromboembolism Prophylaxis in Critical ill patients.</i> • <i>Bleeding Risk Assessment</i> • <i>Reversal of Anticoagulants.</i> | | | | | | | | | | | | | |
| Pregnancy and lactation <ul style="list-style-type: none"> • Pharmacokinetic changes in pregnancy. • Pharmacodynamic changes in pregnancy. | | √ | | | | | | √ | √ | | | | |
| Pregnancy and lactation <ul style="list-style-type: none"> • . • Placental Transfer of Drugs • Pregnancy and Drug Use. • Patient Counseling Regarding Social Drugs. | | √ | | | | | | √ | √ | | | | |
| Pediatric <ul style="list-style-type: none"> • <i>Factors Affecting Pediatric</i> | | √ | | | | | | √ | √ | | | | |



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|--|--|---|---|--|--|---|--|---|---|--|--|--|--|
| <p><i>Therapy Effect of pharmacokinetic and pharmacodynamic differences on drug.</i></p> <ul style="list-style-type: none"> <i>Examples of Common Clinical Disorders in Pediatrics:</i> <ol style="list-style-type: none"> <i>Acute Otitis Media.</i> <i>Pharyngitis</i> | | | | | | | | | | | | | |
| <p>Geriatrics</p> <ul style="list-style-type: none"> <i>Pharmacokinetic age-related changes.</i> <i>Pharmacodynamic age-related changes.</i> <i>Common Clinical Disorders</i> <i>Principles and Goals of Drug Therapy in the Elderly</i> | | √ | | | | | | √ | √ | | | | |
| <p>Supportive Care in Oncology</p> <ul style="list-style-type: none"> <i>Myelosuppression: Neutropenia, Anemia, Thrombocytopenia</i> <i>Chemotherapy-Induced Nausea and Vomiting (CINV)</i> <i>Tumor Lysis Syndrome</i> <i>Oral Mucositis</i> | | | √ | | | √ | | √ | √ | | | | |



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|--|---|--|--|--|--|---|--|---|--|--|--|--|
| Fluids <ul style="list-style-type: none"> • <i>Distribution of Total Body Fluids</i> • <i>Fluid Resuscitation in ICU</i> | | | | | | | | √ | | | | |
| Electrolytes <ul style="list-style-type: none"> • <i>Hyponatremia</i> • <i>Hypernatremia</i> • <i>Hypokalemia</i> Acid -Base Disorders <ul style="list-style-type: none"> • <i>Metabolic Acidosis</i> • <i>Metabolic Alkalosis</i> • <i>Respiratory Alkalosis</i> | | | | | | | | √ | | | | |
| Clinical Pharmacy <ol style="list-style-type: none"> 1. <i>Prescription monitoring.</i> 2. <i>Prescribing advice to medical and nursing staff.</i> 3. <i>Medication errors and adverse drug reaction reporting.</i> 4. <i>Medication history-taking and medicines reconciliation.</i> 5. <i>Patient education and counselling.</i> 6. <i>Pharmacokinetics and therapeutic drug level monitoring.</i> 7. <i>Personalized medicine</i> | √ | | | | | √ | | | | | | |



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|--|---|--|--|--|--|---|---|--|--|---|---|---|
| 8. Education and training | | | | | | | | | | | | |
| 9. Medicines formularies | | | | | | | | | | | | |
| 10. Clinical outcomes | | | | | | | | | | | | |
| 11. Professional and clinical audit | | | | | | | | | | | | |
| Patient History Taking | | | | | | | | | | | | |
| <ul style="list-style-type: none"> • Drug Use Process. • Relevant patient details • History Taking Template | √ | | | | | √ | | | | √ | √ | |
| Patient Management Approach | | | | | | | | | | | | |
| <ul style="list-style-type: none"> • Pharmaceutical Care • Drug Therapy Problem | √ | | | | | √ | | | | √ | √ | |
| Anemia (Self-learning) | | | | | | | √ | | | | √ | √ |

B. Tutorial Part

| Course contents | Outcomes Domains / Key elements | | | | | | | | | |
|--|------------------------------------|---------|---------|---------|----------|----------|---------|---------|----------|---------|
| | Domain 1 | | | | Domain 2 | Domain 3 | | | Domain 4 | |
| | 1.1.1.1 | 1.1.1.2 | 1.1.4.1 | 1.1.5.1 | 2.4.3.1 | 3.2.2.1 | 3.2.5.1 | 3.2.7.1 | 4.1.1.1 | 4.3.2.1 |
| • Case Presentation | √ | | | | √ | | √ | √ | √ | √ |
| Anticoagulants: • Clinical Use of Heparin & Enoxaparin • Case study | √ | | | √ | √ | | √ | √ | √ | √ |
| Anticoagulants: • Warfarin | √ | | | √ | √ | | √ | √ | √ | √ |
| Anticoagulants: Treatment & Prophylaxis of DVT | √ | | | √ | √ | | √ | √ | √ | √ |
| • Case study: Acute Otitis Media | | √ | | | | | √ | √ | √ | √ |
| • Case study: Pharyngitis | | √ | | | | | √ | √ | √ | √ |
| Case study: Supportive care in oncology | | √ | | | √ | √ | √ | √ | √ | √ |
| • Case study: Fluids. | | | √ | | | | √ | √ | √ | √ |
| • Case study: Electrolytes. | | | | | | | √ | √ | √ | √ |
| Case Study: Obtaining a Patient History | √ | | | | √ | | √ | √ | √ | √ |
| Management of Paracetamol Overdose with Acetylcysteine | √ | | | | √ | | √ | √ | √ | √ |
| Drug Interaction | √ | | | | √ | | | | √ | √ |

Matrix 2. Between course contents, methods of learning and assessment

| A) Theoretical Part: | | | | | | | | |
|--|---------|----------------|------------------|------------|---------------|-------------|---------|------|
| Course Contents | Lecture | Online lecture | Group Discussion | Case Study | Self-learning | Course Work | Written | Oral |
| Blood Disorders: Blood Clot <ul style="list-style-type: none"> • Clot formation. • Clinical presentation of Deep Venous Thrombosis (DVT) & Pulmonary Embolism (PE) • Clotting Cascade. • Anticoagulants. (IV) • Heparin Induced Thrombocytopenia | √ | | √ | √ | | √ | √ | √ |
| Blood Disorders: Blood Clot <ul style="list-style-type: none"> • Oral Anticoagulants • Purple Toe Syndrome. • Clinical Use of Anticoagulant: 1-Treatment of DVT in outpatients. | √ | | √ | √ | | √ | √ | √ |
| Blood Disorders: Blood Clot <ul style="list-style-type: none"> • Clinical Use of Anticoagulant: <ol style="list-style-type: none"> 2- Stroke prevention in atrial fibrillation. 3- VTE Prophylaxis in surgical patients 4- Venous Thromboembolism Prophylaxis in Critical ill patients. • Bleeding Risk Assessment Reversal of Anticoagulants. | √ | | √ | √ | | √ | √ | √ |
| Pregnancy and lactation <ul style="list-style-type: none"> • Pharmacokinetic changes in pregnancy. • Pharmacodynamic changes in pregnancy. | √ | | √ | √ | | √ | √ | √ |
| Pregnancy and lactation <ul style="list-style-type: none"> • Placental Transfer of Drugs • Pregnancy and Drug Use. • Patient Counselling Regarding Social Drugs. | √ | | √ | √ | | √ | √ | √ |
| Paediatric <ul style="list-style-type: none"> • Factors Affecting Paediatric Therapy Effect of pharmacokinetic and pharmacodynamic differences on drug. • Examples of Common Clinical Disorders in Paediatrics: <ol style="list-style-type: none"> 1- Acute Otitis Media. 2- Pharyngitis. | √ | | √ | √ | | | √ | √ |
| Geriatrics <ul style="list-style-type: none"> • Pharmacokinetic age-related changes. • Pharmacodynamic age-related changes. • Common Clinical Disorders • Principles and Goals of Drug Therapy in the Elderly | √ | | √ | √ | | | √ | √ |
| Supportive Care in Oncology <ul style="list-style-type: none"> • Myelosuppression: Neutropenia, Anemia, Thrombocytopenia • Chemotherapy-Induced Nausea and Vomiting (CINV) • Tumor Lysis Syndrome • Oral Mucositis | √ | √ | √ | √ | | | √ | √ |

| | | | | | | | | |
|--|---|--|--------------------------|-------------------------|-------------------|----------------------|-------------------|----------------------|
| Fluids <ul style="list-style-type: none"> • Distribution of Total Body Fluids • Fluid Resuscitation in ICU | √ | | √ | √ | | | √ | √ |
| Electrolytes <ul style="list-style-type: none"> ○ Hyponatremia ○ Hypernatremia ○ Hypokalaemia Acid -Base Disorders <ul style="list-style-type: none"> • Metabolic Acidosis • Metabolic Alkalosis • Respiratory Alkalosis | √ | | √ | √ | | | √ | √ |
| Clinical Pharmacy <ol style="list-style-type: none"> 1. Prescription monitoring. 2. Prescribing advice to medical and nursing staff. 3. Medication errors and adverse drug reaction reporting. 4. Medication history-taking and medicines reconciliation. 5. Patient education and counselling. 6. Pharmacokinetics and therapeutic drug level monitoring. 7. Personalized medicine 8. Education and training 9. Medicines formularies 10. Clinical outcomes 11. Professional and clinical audit | √ | | √ | √ | | | √ | √ |
| Patient History Taking <ul style="list-style-type: none"> • Drug Use Process. • Relevant patient details • History Taking Template | √ | | √ | √ | | | √ | √ |
| Patient Management Approach <ul style="list-style-type: none"> • Pharmaceutical Care • Drug Therapy Problem | √ | | √ | √ | | | √ | √ |
| Anemia (Self-learning) | √ | | √ | √ | √ | | √ | √ |
| B) Tutorial Part: | | | | | | | | |
| Course Contents | | | Tutorial sessions | Group Discussion | Case Study | Self-learning | Corse Work | Tutorial exam |
| Case Presentation | | | √ | √ | √ | | | √ |
| Anticoagulants: <ul style="list-style-type: none"> • Clinical Use of Heparin & Enoxaparin Case study | | | √ | √ | √ | | | √ |
| Anticoagulants: Treatment & Prophylaxis of DVT | | | √ | √ | √ | | | √ |
| Anticoagulants: Treatment & Prophylaxis of DVT | | | √ | √ | √ | | | √ |
| Case study: Acute Otitis Media | | | √ | √ | √ | | | √ |
| Case study: Pharyngitis | | | √ | √ | √ | | | √ |
| Case study: Supportive care in oncology | | | √ | √ | √ | | | √ |
| Case study: Fluids. | | | √ | √ | √ | | | √ |
| Case study: Electrolytes. | | | √ | √ | √ | | | √ |
| Case Study: Obtaining a Patient History | | | √ | √ | √ | | | √ |
| Management of Paracetamol Overdose with Acetylcysteine | | | √ | √ | √ | | | √ |
| Drug Interaction | | | √ | √ | √ | | | √ |

| | |
|---------------------------|--|
| Course Coordinator | Dr. Mona Mohammed Eltamalawy |
| | <i>Mona Eltamalawy</i> |
| Head of Department | Professor Mohamed El-Houseiny Shams |
| | <i>Mohamed El-Houseiny Shams</i> |

Date: 7 /9 /2023



بكالوريوس الصيدلة (فارم د – Pharm D)

Course Specification

Academic year: 2023/2024

| | |
|---|--|
| Course name: Clinical research, and Pharmacovigilance | اسم المقرر: البحث الإكلينيكي، اليقظة الدوائية |
| Academic Level: 5 | المستوى الأكاديمي: الخامس |
| Scientific department: Clinical Pharmacy and Pharmacy Practice | القسم العلمي: الصيدلة الإكلينيكية والممارسة الصيدلانية |
| Head of Department: Prof. Mohamed Elhusieny Shams | رئيس القسم: أ.د/ محمد الحسيني شمس |
| Course Coordinator: Dr. Noha Osama Mansour | منسق المقرر: د/ نهى أسامة منصور |

| | |
|--|---|
| University | Mansoura |
| Faculty | Pharmacy |
| Department offering the course | Clinical Pharmacy and Pharmacy Practice |
| Department supervising the course | Clinical Pharmacy and Pharmacy Practice |
| Program on which the course is given | Bachelor in Pharmacy -Pharm D by law |
| Academic Level | Fifth level, first semester, 2023-2024 |
| Date of course specification approval | 7 th September 2023 |

A. Basic Information: Course data:

| | |
|--|---|
| Course Title | Clinical research, and Pharmacovigilance |
| Course Code | PP 518 |
| Teaching Hours: Lecture | 1 |
| Teaching Credit Hours: Tutorial | 1 |
| Total Credit Hours | 2 (Credit H) |

B. Professional Information:

1. Course Aims:

This course aims to:

- Introduces the student to the basic principles of clinical research design and types of studies with deeper insight on clinical trials.
- Teach students statistical presentation of research data and ethical guidelines in drug research.
- Develop understanding of how to plan, implement, analyze, and criticize pharmacoepidemiologic studies.
- Educate the students about pharmacovigilance and concept, and adverse drug reactions reporting system.

2. Course Key elements:

Domain 1- fundamental knowledge

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 1.1.1 | 1.1.1.1 | Describe the different types of research studies, statistical analysis used in clinical trials, and awareness of pharmacovigilance and Pharmacoepidemiology. |
| 1.1.6 | 1.1.6.1 | Critically analyze intervention trials such as randomized controlled trials and observational trials. |
| 1.1.7 | 1.1.7.1 | Locate most updated evidence-based information, customized to patient care. |

Domain 2: professional and ethical practice

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 2.5.2 | 2.5.2.1 | Using proper keywords and search techniques on PubMed to find related evidence to patient's care. |
| 2.5.3 | 2.5.3.1 | Using randomized controlled trials to compare efficacy and safety of different therapeutic interventions in clinical scenario. |

Domain 3: pharmaceutical care

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 3.2.3 | 3.2.3.1 | Utilize highest level of evidence in the field of phytotherapy to support patient's pharmaceutical care plan. |
| 3.2.4 | 3.2.4.1 | Collect case series and case reports about adverse effects of drugs and interpret the suitable management to the patient and healthcare professionals. |

DOMAIN 4: PERSONAL PRACTICE

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|---|
| 4.1.1 | 4.1.1.1 | Participate with other healthcare professionals to make suitable clinical decision regarding the patient. |
| 4.1.2 | 4.1.2.1 | Problem solving skills, and work autonomously in team to criticize information. |
| 4.3.2 | 4.3.2.1 | Practice self-learning to improve professional skills |

3. Course Contents

A) Theoretical part

| Week No. | Lecture Topics | Lecture Credit Hours |
|----------|--|----------------------|
| 1 | <p>Clinical outcomes</p> <p>Types of Clinical Outcome Assessments, Clinician-reported outcomes (ClinRO), Examples of categorical ClinRO assessments, Outcome Measurement Properties.</p> | 1 |
| 2 | <p>Patient-reported outcomes</p> <p>Types of PROs, Generic PROs, Example of a generic PRO.</p> | 1 |
| 3 | <p>Patient-reported outcomes</p> <p>Disease specific PROs Examples of Disease- or Population Specific Measures.</p> | 1 |
| 4 | <p>Ethics in clinical research</p> <p>Development of research ethics, Tuskegee Syphilis Study, Nazi Experiment & Nuremberg Trial (1946), History and Development of Research Ethics, Institutional review board (IRB) review of studies, Informed consent, Components of informed consent.</p> | 1 |
| 5 | <p>Observational studies</p> <p>Types of observational studies, Case-Control Study Interpreting RRs/ORs, Cross-sectional study, Prospective cohort study, Retrospective cohort study</p> | 1 |
| 6 | <p>Statistical presentation of research data</p> <p>Types of variables and data, Descriptive statistics, Hypothesis testing, Choosing a statistical test, Parametric versus nonparametric tests.</p> | 1 |
| 7 | <p>Statistical presentation of research data</p> <p>Correlation, Pearson Correlation, Spearman rank correlation, Regression analysis, Types of regression analysis, Survival analysis.</p> | 1 |
| 8 | <p>How to plan a research study</p> <p>Focus on the specifics of designing an interventional study, discussing the formulation of a research question, The lecture would also provide a comprehensive overview of the process of planning a research study including the pre investigational, investigational, and post-investigational phases</p> | 1 |

| | | |
|----|---|---|
| | | |
| 9 | <p>Understanding the Basics: An Introduction to Interventional Research</p> <p>The foundational concepts of interventional research, including its definition, purpose, and types of interventional studies.</p> | 1 |
| 10 | <p>Identifying Bias and Conducting Critical Appraisal in Clinical Research</p> <p>The lecture would introduce the concept of critical appraisal, explaining why it's important and how it helps in the assessment of the reliability, and applicability of research findings. It would cover the key steps in the critical appraisal process and provide practical tools</p> | 1 |
| 11 | <p>Reporting of randomized controlled trials</p> <p>The lecture would then introduce the Consolidated Standards of Reporting Trials (CONSORT) statement, a critical guideline for reporting RCTs, and explore each of its key components.</p> | 1 |
| 12 | <p>Pharmacovigilance: Adverse Drug Reactions and the Role of Spontaneous Reporting</p> <p>Introduction to pharmacovigilance with a specific focus on the importance of spontaneous reporting systems in identifying and managing these reactions. It would explain the different types of ADRs.</p> | 1 |
| 13 | <p>Pharmacovigilance: Signal detection</p> <p>Focus on signal detection, cover strategies for signal evaluation, including clinical assessment, and how these signals lead to actions.</p> | 1 |
| 14 | <p>Pharmacoepidemiology. (self-learning) and revision</p> <p>Focus on applications of pharmacoepidemiology, including drug safety surveillance and assessment of drug utilization patterns</p> | 1 |
| 15 | Final written and oral exam | - |

B) Practical part

| Week No. | Tutorial topics | Credit hours |
|----------|-------------------------|--------------|
| 1 | Cross sectional studies | 1 |

| | | |
|----|--|---|
| | | |
| 2 | Prospective cohort studies | 1 |
| 3 | Retrospective cohort study | 1 |
| 4 | Case control study | 1 |
| 5 | Statistical presentation of research data | 1 |
| 6 | Randomized controlled trials: Hands on CONSORT guidelines. | 1 |
| 7 | Interpreting interventional research studies <ul style="list-style-type: none"> • Parallel studies | 1 |
| 8 | Midterm exam | - |
| 9 | Interpreting interventional research studies <ul style="list-style-type: none"> • Cross over studies | 1 |
| 10 | Spontaneous reporting: <ul style="list-style-type: none"> • The yellow card scheme • The pink card scheme | 1 |
| 11 | Causality assessment | 1 |
| 12 | Consolidating key concepts: interactive exploration of research study designs and pharmacovigilance practices | 1 |
| | Group project: <i>Critical appraisal of observational study</i> <ul style="list-style-type: none"> • <i>CASP check list for case control study.</i> • <i>CASP check list for cohort study</i> | 1 |
| 13 | | 1 |
| 14 | Practical exam (OSCE) | 1 |

| | | |
|---------------------|-------------|-------------------------------------|
| Assessment 4 | Oral | Starting from 15 th week |
|---------------------|-------------|-------------------------------------|

c- Weighing of assessments

| | | |
|--------------|---|------|
| 1 | Mid-term examination & Semester work | 15% |
| 2 | Practical | 25% |
| 3 | Final-term examination | 50 % |
| 4 | Oral examination | 10 % |
| Total | | 100% |

6. Facilities required for teaching and learning

| | |
|------------------------------|---|
| Classroom | Data show- Computers, Internet, Platform |
| Laboratory facilities | Data show – computers, internet, round tables |
| Library | Reference books |

7. Matrix:

1. Course contents and course key elements

| Course contents | Outcomes | | | | | | | | | |
|---|------------------------|---------|---------|----------|---------|----------|---------|----------|---------|---------|
| | Domains / Key elements | | | | | | | | | |
| | Domain 1 | | | Domain 2 | | Domain 3 | | Domain 4 | | |
| | 1.1.1.1 | 1.1.6.1 | 1.1.7.1 | 2.5.2.1 | 2.5.3.1 | 3.2.3.1 | 3.2.4.1 | 4.1.1.1 | 4.1.2.1 | 4.3.2.1 |
| Clinical outcomes | √ | | | √ | √ | | √ | | | √ |
| <i>Patient-reported outcomes</i> | | √ | | | √ | | | | | √ |
| <i>Patient-reported outcomes</i> | | √ | | | √ | | | | | √ |
| Ethics in clinical research | | √ | | | | | | | | √ |
| Observational studies | √ | | | | | | | | | |
| Statistical presentation of research data | | √ | | | √ | √ | | | | √ |
| Statistical presentation of research data | √ | | | | √ | √ | | | | √ |
| How to plan a research study | | √ | | | | √ | | | | √ |
| Understanding the Basics: An Introduction to Interventional Research | | √ | | | | √ | | √ | √ | √ |
| Identifying Bias and Conducting Critical Appraisal in Clinical Research | | √ | | | | √ | | √ | √ | √ |
| Reporting of randomized controlled trials | | √ | | | | √ | | √ | √ | √ |

| | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|
| Pharmacovigilance: Adverse Drug Reactions and the Role of Spontaneous Reporting | | √ | | | | √ | | √ | √ | √ |
| Pharmacovigilance: Signal detection | | √ | | | | √ | | √ | √ | |
| Pharmacoepidemiology | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Tutorial topics | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| <ul style="list-style-type: none"> - Cross sectional studies - Prospective cohort studies - Retrospective cohort study - Case control study - Statistical presentation of research data - Randomized controlled trials: Hands on CONSORT guidelines. - Interpreting interventional research studies o Parallel studies o Cross over studies - Spontaneous reporting: <ul style="list-style-type: none"> o The yellow card scheme o The pink card scheme - Causality assessment - Consolidating key concepts: interactive exploration of - research study designs and | | | | | | | | | | |

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| pharmacovigilance practices - Group project: Critical appraisal of observational study ○ CASP check list for case control study. ○ CASP check list for cohort study | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|

Matrix 2. Between course contents, methods of learning, and assessment

A) Theoretical part:

| Course Contents | Teaching and Learning methods | | | | | Assessment methods | | | |
|--|-------------------------------|-----------------|----------------------|--------------|---------------|--------------------|---------------------|---------|------|
| | Lecture | Hybrid learning | Comp. aided learning | Lab sessions | Self-learning | Course Work | Practical/ Tutorial | Written | Oral |
| Clinical outcomes | √ | | √ | | | √ | | √ | √ |
| <i>Patient-reported outcomes</i> | √ | | √ | | | √ | | √ | √ |
| <i>Patient-reported outcomes</i> | √ | | √ | | | √ | | √ | √ |
| Ethics in clinical research | √ | | √ | | | √ | | √ | √ |
| Observational studies | √ | | √ | | | √ | | √ | √ |
| Statistical presentation of research data | √ | | √ | | | | | √ | √ |
| Statistical presentation of research data | √ | | √ | | | | | √ | √ |
| How to plan a research study | √ | √ | √ | | | | | √ | √ |
| Understanding the Basics: An Introduction to Interventional Research | √ | | √ | | | | | √ | √ |
| Identifying Bias and Conducting Critical Appraisal in Clinical Research | √ | | √ | | | | √ | √ | √ |

| | | | | | | | | | |
|--|---|---|---|--|---|--|--|---|---|
| Reporting of randomized controlled trials | √ | | √ | | | | | √ | √ |
| Pharmacovigilance: Adverse Drug Reactions and the Role of Spontaneous Reporting | √ | | √ | | | | | √ | √ |
| Pharmacovigilance: Signal detection | √ | | √ | | | | | √ | √ |
| Pharmacoepidemiology | | √ | √ | | √ | | | √ | √ |

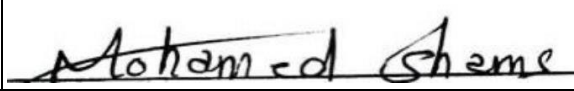
B) Practical part:

| Course Contents | Teaching and Learning methods | | | | | Assessment methods | | | |
|--|-------------------------------|-----------------|----------------------|--------------|---------------|--------------------|--------------------|---------|------|
| | Lecture | Hybrid learning | Comp. aided learning | Lab sessions | Self-learning | Corse Work | Practical/Tutorial | Written | Oral |
| Cross sectional studies | | | | √ | | | √ | | |
| Prospective cohort studies | | | | √ | | | √ | | |
| Retrospective cohort study | | | | √ | | | √ | | |
| Case control study | | | | √ | | | √ | | |
| Statistical presentation of research data | | | | √ | | | √ | | |
| Randomized controlled trials: Hands on CONSORT guidelines. | | | | √ | | | √ | | |
| Interpreting interventional research studies <ul style="list-style-type: none"> • Parallel studies | | | | √ | | | √ | | |

| | | | | | | | | | |
|--|--|--|--|---|--|---|---|--|--|
| Interpreting interventional research studies <ul style="list-style-type: none"> • Cross over studies | | | | √ | | | √ | | |
| Spontaneous reporting: <ul style="list-style-type: none"> • The yellow card scheme • The pink card scheme | | | | √ | | | √ | | |
| Causality assessment | | | | √ | | | √ | | |
| Consolidating key concepts: interactive exploration of research study designs and pharmacovigilance practices | | | | √ | | | √ | | |
| Group project: <i>Critical appraisal of observational study</i> <ul style="list-style-type: none"> • <i>CASP check list for case control study.</i> • <i>CASP check list for cohort study</i> | | | | √ | | √ | √ | | |

9- List of References

| No | Reference | Type |
|----|---|----------------|
| 1. | Lecture notes prepared by teaching professors | Course notes |
| 2. | Karen Shapiro; Chelsea Bombatch; Stephanie D Garrett; 2Angie Veverka, NAPLEX Course Book, 2022 | Essential Book |
| 3. | General Administration for Pharmaceutical Vigilance, Egyptian Guidelines for Detecting & Reporting of Adverse Reactions For Pharmaceutical products and Medical Devices For Healthcare Providers, 2021. | Essential Book |
| 4. | Prasanta Kumar Bhattacharya, Research methodology in the health science a quick reference guide, McGraw Hill Professional, 2021. | Essential Book |
| 5. | Kevin M. Sowinski, Study Designs: Fundamentals, Interpretation, and Research Topics, ACCP Updates in Therapeutics © 2018 Pharmacotherapy | Essential Book |
| 6. | Tom Brody, Clinical Trials, second edition 2016 | Essential Book |
| 7. | Stephen B. Hulley, Steven R. Cummings, Warren S. Browner, <i>et al.</i> Designing Clinical Research, fourth edition 2013 | Essential Book |
| 8. | http://www.sciencedirect.com http://www.google scholar.com http://www.pubmed.com | Websites |

| | |
|---------------------------|---|
| Course Coordinator | Dr. Noha Osama Mansour Noha O. Mansour |
| Head of Department | Prof. Mohamed Elhussieny Shams  |

Date: 7 /9 /2023



(بكالوريوس الصيدلة) فارم D-Pharm

Academic year:2023/2024

| | |
|---|---|
| Course name: Pathology | باتولوجي : اسم المقرر |
| Academic Level: level five | الخامس : المستوى الأكاديمي |
| Scientific department: Pathology department, Faculty of Medicine | قسم الباثولوجي, كلية الطب : القسم العلمي |
| Head of supervision Department: Prof. El Sayed E. Habib | رئيس القسم المشرف: أ.د/ السيد الشربيني حبيب  |
| Course Coordinator: Dr. Reham Nageib | منسق المقرر |

| | |
|--|---|
| Faculty | Pharmacy |
| Department offering the course | Pathology department (Faculty of Medicine) |
| Department supervising the course | Microbiology & Immunology |
| Program on which the course is given | Bachelor in Pharmacy- Pharm D |
| Academic Level | Level five, first semester, 2023-2024 |
| Date of course specification approval | 10/9/2023 |

A. Basic Information: Course data:

| | |
|---|---------------------|
| Course Title | Pathology |
| Course Code | MD 512 |
| Prerequisite | Registration |
| Teaching credit Hours: Lecture | 1 |
| Teaching Credit Hours: Practical/ tutorial | 1 |
| Total Credit Hours | 2 |

B. Professional Information:

1. Course Aims:

On completion of the course, the student will be able to recognize different diseases regard pathologic terminology, pathogenesis, and diagnosis bases on morphologic changes.

2- Course k. elements:

Upon completing the course, the student will be able to dominate the following key elements

Domain 1- Fundamental Knowledge

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|---|
| 1.1.2 | 1.1.1.1 | Define inflammation and its pathogenesis and classification with comparison between them. |
| | 1.1.1.2 | Define repair & identify its types. Enumerate complication and factors affecting repair. |
| 1.1.4 | 1.1.4.1 | Define & identify different disorders (cardiac and respiratory, blood vessels and kidney). |
| 1.1.8 | 1.1.8.1 | Identify and classify neoplastic conditions. Compare between benign and malignant tumors. Illustrate steps of carcinogenesis. |

Domain 2: Professional and Ethical Practice

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|---|
| 2.1.2 | 2.1.2.1 | Establish the best use of knowledge regarding patient health and associated ethical guidelines. |
| 2.4.5 | 2.4.5.1 | Evaluate medical conditions professionally with health care team members to manage and/or prevent diseases. |

Domain 3: Pharmaceutical Care

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 3.1.4 | 3.1.4.1 | Utilize etiology, epidemiology, pathogenesis, laboratory diagnosis, and clinical features to suggest the proper preventive strategies for various infections/diseases. |
| 3.2.5 | 3.2.5.1 | Provide education and counseling to patients, healthcare professionals and communities to achieve safe and cost-effective use of medicine. |

Domain 4: Personal Practice:

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 4.2.1 | 4.2.1.1 | Use the correct medical terms related to different diseases when dealing with different members of the community. |
| 4.3.2 | 4.3.2.1 | Use different approaches to ensure ongoing professional development including self-learning and establishing a strategy to achieve this aim. |

3- Course Contents:

| Week No | Topics | Lecture credit (hr.) |
|--------------------|--|----------------------|
| Theoretical topics | | |
| 1. | Introduction to pathology | 1 |
| 2. | Adaptation, reversible and irreversible cell injury | 1 |
| 3. | Intra and extracellular accumulation of different substances | 1 |
| 4. | Classification and pathogenesis of acute inflammation | 1 |
| 5. | Chronic inflammation | 1 |
| 6 | Pathology of repair | 1 |
| 7 | Pathology of different circulatory disorders | 1 |
| 8 | Introduction and classification of neoplasia | 1 |
| 9 | Respiratory disorders- Upper respiratory tract disorders | 1 |
| 10 | Respiratory disorders- Lower respiratory tract disorders | 1 |
| 11 | Cardiovascular disorders- Disorders of tissue damage and myocardial infarction | 1 |
| 12 | Cardiovascular disorders- types and disorders occurring in heart valves | 1 |
| 13 | Blood disorders – Hypertension effect on blood vessels (Self-learning topic) | 1 |
| 14 | Kidney disorders – Damage in the nephrons (Self-learning topic) | 1 |

| | | |
|------------------|--|---|
| 15 | Final written & oral exam | |
| Practical topics | | |
| 1 | Introduction to pathology | 1 |
| 2 | Adaptation and Necrosis | 1 |
| 3 | Intra and extracellular accumulation of different substances | 1 |
| 4 | Acute inflammatory diseases | 1 |
| 5 | Chronic inflammatory diseases | 1 |
| 6 | Complication of repair and scar | 1 |
| 7 | Infraction, | 1 |
| 8 | Midterm exam | 1 |
| 9 | Thrombosis | 1 |
| 10 | Tuberculosis and bilharziasis. | 1 |
| 11 | Benign tumors | 1 |
| 12 | Malignant tumors | 1 |
| 13 | gangrene. | 1 |
| 14 | Final practical exam | |

4- Teaching and Learning Methods:

| No | Teaching and Learning Methods | week | K. elements to be addressed |
|-----|--|-----------|---|
| 5.1 | <p>Computer aided learning:</p> <p>a. Lectures using Data show, PowerPoint presentations</p> <p>b. Distance learning</p> <p>Online learning through my mans "Mansoura university "as recorded /video lectures.</p> <p>Interactive discussion through My Mans</p> | 1-6, 7-14 | <p>1.1.1.1, 1.1.1.2, 1.1.4.1, 1.1.8.1, 2.1.2.1, 2.4.5.1, 3.1.4.1, 3.2.5.1, 4.2.1.1, 4.3.2.1</p> |
| 5.2 | Self-learning | 13-14 | <p>1.1.1.1, 1.1.1.2, 1.1.4.1, 1.1.8.1, 2.1.2.1, 2.4.5.1, 3.1.4.1, 3.2.5.1, 4.2.1.1, 4.3.2.1</p> |

| | | | |
|-----|--|----|--|
| 5.3 | Class Activity: Group discussion offline and online. | 10 | 1.1.1.1, 1.1.1.2, 1.1.4.1, 1.1.8.1, 2.1.2.1, 2.4.5.1, 3.1.4.1, 3.2.5.1, 4.2.1.1, 4.3.2.1 |
| 5.4 | Problem – based learning and brainstorming | 10 | 4.2.1.1, 4.3.2.1 |

5- Student Assessment:

Assessment Methods:

| Assessment Methods | K elements to be assessed |
|---|--|
| 1- Periodical (Mid-term exam) / Course work | 1.1.1.1, 1.1.1.2, 1.1.4.1, 1.1.8.1, 2.1.2.1, 2.4.5.1, 3.1.4.1, 3.2.5.1, 4.2.1.1, 4.3.2.1 |
| 2-Practical exam applying OSPE | 1.1.1.1, 1.1.1.2, 1.1.4.1, 1.1.8.1, 2.1.2.1, 2.4.5.1, 3.1.4.1, 3.2.5.1, |
| 3-Written exam | 1.1.1.1, 1.1.1.2, 1.1.4.1, 1.1.8.1, 2.1.2.1, 2.4.5.1, 3.1.4.1, 3.2.5.1, 4.2.1.1, 4.3.2.1 |
| 4-Oral | 1.1.1.1, 1.1.1.2, 1.1.4.1, 1.1.8.1, 2.1.2.1, 2.4.5.1, 3.1.4.1, 3.2.5.1, 4.2.1.1, 4.3.2.1 |

b. Assessment schedule

| | | |
|--------------|--|-----------------|
| Assessment 1 | Periodical (Mid-term exam) / Course work | |
| Assessment 2 | Practical examination and tutorial | 13th -14th week |
| Assessment 3 | Written exam | 15th week |
| Assessment 4 | Oral exam | 15th week |

c. Weighing of assessments

| | | |
|-------|--|------|
| 1 | Periodical (Mid-term) exam / Course work | 15% |
| 2 | Practical examination and tutorial | 25% |
| 3 | Final-term examination | 50% |
| 4 | Oral examination | 10% |
| Total | | 100% |

6- Facilities required for teaching and learning

| | |
|-------------------------|--|
| -Class room | Data show- Computers, Internet. |
| - Laboratory facilities | Microscopes- chemicals- glass wares- white board |

7- Matrix 1: Matrix of course content versus course k. elements:

A) Theoretical topics

| Course contents | Domain 1 | | | | Domain 2 | | Domain 3 | | Domain 4 | |
|--|----------|---------|---------|---------|----------|---------|----------|---------|----------|---------|
| | 1.1.1.1 | 1.1.1.2 | 1.1.4.1 | 1.1.8.1 | 2.1.2.1 | 2.4.5.1 | 3.1.4.1 | 3.2.5.1 | 4.2.1.1 | 4.3.2.1 |
| Introduction to pathology | √ | | | | √ | √ | | | | |
| Adaptation, reversible and irreversible cell injury | √ | √ | | √ | | √ | | | | |
| Intra and extracellular accumulation of different substances | | | | √ | | √ | | | | |
| Classification and pathogenesis of acute inflammation | | | | √ | | √ | | | | |
| Chronic inflammation | | | | √ | | √ | | √ | | |
| Pathology of repair | √ | √ | | √ | √ | | | | | |
| Pathology of different circulatory disorders | | √ | | √ | √ | √ | √ | √ | | |
| Introduction and classification of neoplasia | √ | | | √ | √ | √ | √ | | | |
| Respiratory disorders- Upper respiratory tract disorders | √ | √ | √ | | | √ | √ | √ | | |
| Respiratory disorders- Lower | | √ | √ | | | √ | √ | √ | | |

| | | | | | | | | | | |
|--|---|---|---|--|--|---|---|---|---|---|
| respiratory tract disorders | | | | | | | | | | |
| Cardiovascular disorders- Disorders of tissue damage and myocardial infarction | √ | √ | √ | | | √ | √ | √ | √ | |
| Cardiovascular disorders- types and disorders occurring in heart valves | | √ | √ | | | √ | √ | √ | √ | |
| Blood disorders – Hypertension effect on blood vessels (Self-learning topic) | | √ | √ | | | √ | √ | √ | √ | √ |
| Kidney disorders – Damage in the nephrons (Self-learning topic) | | √ | √ | | | √ | √ | √ | √ | √ |

B) Practical topics:

| Course contents | Domain 1 | | | | Domain 2 | | Domain 3 | | Domain 4 | |
|--|----------|---------|---------|---------|----------|---------|----------|---------|----------|---------|
| | 1.1.1.1 | 1.1.1.2 | 1.1.4.1 | 1.1.8.1 | 2.1.2.1 | 2.4.5.1 | 3.1.4.1 | 3.2.5.1 | 4.2.1.1 | 4.3.2.1 |
| Introduction to pathology | √ | √ | | √ | √ | | √ | | | |
| Adaptation and Necrosis | √ | √ | | √ | | | | √ | | |
| Intra and extracellular accumulation of different substances | | | | | √ | | √ | √ | | |
| Acute inflammatory diseases | √ | | | | | √ | | √ | | |
| Chronic inflammatory diseases | √ | | | | | √ | | | | |
| Complication of repair and scar | | √ | | | | | | | | |
| Infraction, | | √ | √ | | √ | √ | | √ | | |
| Thrombosis | | √ | √ | | √ | √ | √ | √ | | |
| Tuberculosis and bilharziasis. | | | √ | √ | √ | √ | √ | √ | | |
| Benign tumors | | | √ | √ | √ | √ | √ | √ | | |
| Malignant tumors | | | √ | √ | √ | √ | √ | √ | | |
| gangrene. | | | √ | | √ | √ | | | | |

Matrix 2: between course content, methods of learning and assessment

A) Theoretical Part:

| Course Contents | Teaching and Learning Methods | | | | | Assessment methods | | |
|--|-------------------------------|----------------|------------------|------------|---------------|--------------------|---------|------|
| | Lecture | Online lecture | Group discussion | Case Study | Self-learning | Course Work | Written | Oral |
| Introduction to pathology | √ | | | | | | √ | √ |
| Adaptation, reversible and irreversible cell injury | √ | | | | | | √ | √ |
| Intra and extracellular accumulation of different substances | √ | | | | | | √ | √ |
| Classification and pathogenesis of acute inflammation | √ | | | | | | √ | √ |
| Chronic inflammation | √ | | | | | | √ | √ |
| Pathology of repair | √ | | √ | | | | √ | √ |
| Pathology of different circulatory disorders | √ | | | | | | √ | √ |
| Introduction and classification of neoplasia | √ | | | | | | √ | √ |
| Respiratory disorders- Upper respiratory tract disorders | √ | | √ | √ | | | √ | √ |
| Respiratory disorders- Lower respiratory tract disorders | √ | | | √ | | | √ | √ |

| | | | | | | | | |
|--|---|---|---|---|---|--|---|---|
| Cardiovascular disorders- Disorders of tissue damage and myocardial infarction | √ | | √ | √ | | | √ | √ |
| Cardiovascular disorders- types and disorders occurring in heart valves | √ | | | √ | | | √ | √ |
| Blood disorders – Hypertension effect on blood vessels (Self-learning topic) | | √ | √ | | √ | | √ | √ |
| Kidney disorders – Damage in the nephrons (Self-learning topic) | | √ | √ | | √ | | √ | √ |

B) Practical part:

| Course Contents | Teaching and Learning Methods | | | | | Assessment methods | | |
|--|-------------------------------|----------------|------------------|------------|---------------|--------------------|---------|------|
| | Lecture | Online lecture | Group discussion | Case Study | Self-learning | Course Work | Written | Oral |
| Introduction to pathology | | | | | | √ | | |
| Adaptation and Necrosis | | | √ | | | √ | | |
| Intra and extracellular accumulation of different substances | | | | | | √ | | |
| Acute inflammatory diseases | | | | | | √ | | |
| Chronic inflammatory diseases | | | | | | √ | | |
| Complication of repair and scar | | | √ | | | √ | | |
| Infraction, | | | | √ | | √ | | |
| Thrombosis | | | | √ | | √ | | |

| | | | | | | | | |
|--------------------------------|--|--|---|---|--|---|--|--|
| Tuberculosis and bilharziasis. | | | √ | √ | | √ | | |
| Benign tumors | | | √ | √ | | √ | | |
| Malignant tumors | | | √ | √ | | √ | | |
| gangrene. | | | | √ | | √ | | |




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8- List of References

| No. | Reference | type |
|-----|---|--------------|
| 1 | Pathological basis of diseases (Robbins and Cotran pathology) | Book |
| 2 | Lectures notes prepared by staff members | Course notes |
| 3 | https://www.ekb.eg | website |

| | |
|--------------------|---|
| Course Coordinator | Dr. Reham Nageib |
| Head of Department | Prof. Dr. El Sayed E. Habib |
| |  |

Date: 10/9/2023



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بكالوريوس الصيدلة (فارم دي – Pharm D)

Course Specification

Academic year: 2023/2024

| | |
|---|---|
| Course name: Good Manufacturing Practice | اسم المقرر: ممارسة التصنيع الجيد |
| Academic Level: level 5 | المستوى الأكاديمي : الخامس |
| Scientific department: Pharmaceutics | القسم العلمي : الصيدلانيات |
| Head of Department: Prof. Dr. Irhan Ibrahim Abu Hashim | رئيس القسم : ا.د/ أرهان ابراهيم ابو هاشم |
| Course Coordinator: Ass. Prof. Amira Mohsen Motawee | منسق المقرر : أ.م.د. أميرة محسن مطاوع |



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| | |
|---------------------------------------|------------------------------------|
| University | Mansoura |
| Faculty | Pharmacy |
| Department offering the course | Pharmaceutics |
| Department supervising the course | Pharmaceutics |
| Program on which the course is given | B. Pharm. (Pharm D) |
| Academic Level | Level 5, first semester, 2023-2024 |
| Date of course specification approval | September 2023 |

1. Basic Information: Course data:

| | |
|--------------------------------|-----------------------------|
| Course Title | Good manufacturing practice |
| Course Code | PT 5110 |
| Prerequisite | -- |
| Teaching credit Hours: Lecture | 1 |
| : Practical | 1 |
| Total Credit Hours | 2 |

Professional Information:

1. Course Aims:

This course enables the students to:

- Know the different concepts and regulations of quality assurance and good manufacturing practice.
- Understand the different details of quality principles, quality parameters and Good Manufacturing Practice.
- Understand the different key elements of good manufacturing practice.



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2- Course k. elements:

Upon completing the course, the student will be able to dominate the following key elements

Domain 1- fundamental knowledge

| Program K. element no. | Course K. element no. | Course K. elemnt |
|------------------------|-----------------------|--|
| 1.1.1 | 1.1.1.1 | Identify the general principles and objectives of quality assurance and good manufacturing practice. |
| 1.1.3 | 1.1.3.1 | Recognize the key parts of good manufacturing practice. |
| 1.1.7 | 1.1.7.1 | Illustrate the industrial and clinical benefits of good manufacturing practice. |

Domain 2: Professional and Ethical Practice

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|---|
| 2.2.2 | 2.2.2.1 | Specify the good manufacturing practice regulations for each element of pharmaceutical products (tablets, capsules, injections, liquid-semisolid dosage forms and suppositories). |
| 2.2.4 | 2.2.4.1 | Investigate the requirements of different good manufacturing practices including sampling, qualification, validation, documentation, packaging, labeling and inspection. |
| | 2.2.4.2 | Conclude the consequences of violation of good manufacturing practice. |



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Domain 4: personal practice:

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 4.1.2 | 4.1.2.1 | Retrieve and evaluate information, solve problems, and work effectively in a team. |
| 4.3.2 | 4.3.2.1 | Practice independent learning to promote continuous professional development. |

3- Course Contents:

A- Theoretical Part

| Week No. | Topics | Lecture credit Hours |
|----------|---|----------------------|
| 1 | Introduction about Quality Assurance and Good Manufacturing Practice: definitions, objectives and quality control as well as consequences of GMP violation | 1 |
| 2 | Personnel as a key part of GMP: general requirements, responsibilities of key personnel, consultant and authorized personnel as well as personnel training | 1 |
| 3 | Buildings as a key part of GMP: general requirements, clean room, sanitation and maintenance, lighting, sewage and other waste, and containment | 1 |
| 4 | Equipment as a key part of GMP: requirements of the different types of equipment Materials as a key part of GMP: general requirements, starting materials and packaging materials. | 1 |
| 5 | Packaging and Labeling Control: definitions, requirements of labels and containers, as well as packaging operation | 1 |
| 6 | Documentation and records: aims, important documents and their requirements as well as specifications of labels. | 1 |



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| | | |
|-----------------|--|-------------------------------|
| 7 | Process engineering and energy transfer | 1 |
| 8 | -Records: general requirements, reasons for writing procedures in records, examples of records, batch production records, and quality Records. | 1 |
| 9 | Specifications of labels and testing procedures. | 1 |
| 10 | Qualification and validation: definitions, types, general requirements, validation master plan, | 1 |
| 11 | Self-inspection: definition, requirements, team, frequency, items for self-inspection. Personal sanitation and hygiene (self learning) | 1 |
| 12 | Sampling: definitions of different types of samples. | 1 |
| 13 | The difference between homogeneity and uniformity as well as sampling plan and procedure | 1 |
| 14 | Revision and quiz | 1 |
| 15 | Final written and oral exam | - |
| Week No. | Practical topics | Practical credit hours |
| 1. | Important definitions about GMP | 1 |
| 2. | Introduction: What is I.P.Q.C ? | 1 |
| 3. | I.P.Q.C tests for liquid and semisolid dosage forms. | 1 |
| 4. | I.P.Q.C tests for tablets: ▪ Weight uniformity test, drug content and moisture content. | 1 |
| 5. | I.P.Q.C tests for tablets: ▪ Hardness test, disintegration and dissolution tests. | 1 |



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| | | |
|-----|--|---|
| 6. | Dissolution study for different dosage forms. | 1 |
| 7. | I.P.Q.C tests for injectables. | 1 |
| 8. | Midterm exam | - |
| 9. | Quality control of suppositories: <ul style="list-style-type: none"> ▪ Physical aspects, mechanical strength, melting point test and liquefaction time test. | 1 |
| 10. | Quality control of suppositories: <ul style="list-style-type: none"> ▪ Penetration test, content uniformity and dissolution test. | 1 |
| 11 | Troubleshooting problems during manufacture: <ul style="list-style-type: none"> ▪ Defects related to process and defects related to excipients. | 1 |
| 12 | Troubleshooting problems during manufacture: <ul style="list-style-type: none"> ▪ Defects related to machine | 1 |
| 13 | Troubleshooting problems during manufacture: defects due to other factors. | 1 |
| 14 | Sheet / and Practical exam | 1 |

4- Teaching and Learning Methods:

| Teaching and learning Methods | | Weeks | K. elements to be addressed |
|-------------------------------|---|-------|---|
| 4.1 | Computer aided learning: a. Lectures using Data show, power Point & Advanced lectures b. Distance learning Online learning through my mans "Mansoura university" as recorded video lectures <ul style="list-style-type: none"> ● Interactive discussion through My Mans | 1-14 | 1.1.1.1, 1.1.3.1, 1.1.7.1 2.2.2.1 2.2.4.1, 2.2.4.2 |



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| | | | |
|-----|-----------------------------------|------|-----------------|
| 4.2 | Self-learning | 11 | 4.3.2.1 |
| 4.3 | Practical session using tutorials | 1-14 | 4.3.2.1/4.1.2.1 |
| 4.4 | Class Activity - Presentations | 9-11 | 4.1.2.1 |
| 4.5 | Problem solving | 3-9 | 4.1.2.1 |

5- Student Assessment:-

a- Assessment Methods:

| Assessment Methods | K elements to be assessed |
|---|--|
| 1-Written exam | 1.1.1.1, 1.1.3.1, 1.1.7.1, 2.2.2.1, 2.2.4.1, 2.2.4.2 |
| 2-Practical exam | 1.1.1.1, 1.1.3.1, 1.1.7.1, 2.2.2.1, 2.2.4.1, 4.1.2.1, 4.3.2.1 |
| 3-Oral | 1.1.1.1, 1.1.3.1, 1.1.7.1, 2.2.2.1, 2.2.4.1, 2.2.4.2, 4.1.2.1, |
| 4- Periodical (Mid-term exam) / Course work | 1.1.1.1, 1.1.3.1, 1.1.7.1, 2.2.2.1, 2.2.4.1, 4.1.2.1, |

b. Assessment schedule

| | | |
|--------------|--|------------------------|
| Assessment 1 | Periodical (Mid-term exam) / Course work | 7-9 th week |
| Assessment 2 | Practical examination and tutorial | 14 th week |
| Assessment 3 | Written exam | 15 th week |
| Assessment 4 | Oral exam | 15 th week |

c. Weighing of assessments

| | | |
|--------------|--|-------------|
| 1 | Periodical (Mid-term) exam / Course work | 15% |
| 2 | Practical examination and tutorial | 25% |
| 3 | Final-term examination | 50% |
| 4 | Oral examination | 10% |
| Total | | 100% |



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6- Facilities required for teaching and learning

| | |
|-------------------------|------------------------------------|
| -Class room | Data show, computers, internet. |
| - Laboratory facilities | Data show, computers , white board |
| Library | Books and Pharmacopoeia |

7- List of References

| No | Reference | Type |
|----|--|--------------------|
| 1. | Electronic book prepared by staff members | Course notes |
| 2. | Recorded videos prepared by stuff members | Videos on platform |
| 3. | Quality Assurance of Pharmaceuticals: a compendium of guidelines and related materials. Vol. 2, Good manufacturing practices and inspection. – 2nd ed. By World Health Organization (2007) | Book |
| 4. | Pharmaceutical Manufacturing Handbook: Regulations and Quality by Shayne Cox Gad (2008) | Book |
| 5. | Pharmaceutical quality assurance by Nagori B.P. & et. Al, Leading publisher (2017). | Book |
| 6. | Pharmaceutical Manufacturing Handbook: Regulations and Quality by Shayne Cox Gad, Ph.D., D.A.B.T. Gad Consulting Services Cary, Wiley Intescience, (2008) | Book |
| 7. | Quality Control of Pharmaceuticals: Compendial Standards Specifications, by Sahab Iddin (2017) | Book |
| 8. | Quality Systems Implementation in Pharmaceutical Industry, | Book |



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| | | |
|----|--|----------|
| | University of Mauritius Journal, 436-457, Volume 15 (2009) | |
| 9. | http://www.sciencedirect.com / http://www.google scholar.com / http://www.pubmed.com https://www.ekb.eg | websites |



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8- Matrix of knowledge and skills of the course (Course contents and course key elements)

A- Theoretical part

| Course contents / K. elements (Theoretical part) | Domain 1 | | | Domain 2 | | | Domain 4 | |
|--|----------|---------|---------|----------|---------|---------|----------|---------|
| | 1.1.1.1 | 1.1.3.1 | 1.1.7.1 | 2.2.2.1 | 2.2.4.1 | 2.2.4.2 | 4.1.2.1 | 4.3.2.1 |
| Introduction about Quality Assurance and Good Manufacturing Practice: definitions, objectives and quality control as well as consequences of GMP violation | ✓ | ✓ | ✓ | | | ✓ | | |
| Personnel as a key part of GMP: general requirements, responsibilities of key personnel, consultant and authorized personnel as well as personnel training | ✓ | ✓ | ✓ | ✓ | | | | |
| Buildings as a key part of GMP: general requirements, clean room, sanitation and maintenance, lighting, sewage and other waste, and containment | ✓ | ✓ | ✓ | ✓ | | | | |
| Equipment as a key part of GMP: requirements of the different types of equipment | ✓ | ✓ | ✓ | ✓ | | | ✓ | |
| Materials as a key part of GMP: general requirements, starting materials and packaging materials. | | | | | | | | |
| Packaging and Labeling Control: definitions, requirements of labels and containers, as well as packaging operation | | ✓ | ✓ | ✓ | | | | |



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| | | | | | | | | |
|--|---|---|---|---|---|---|--|---|
| Documentation and records: aims, important documents and their requirements as well as specifications of labels. | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| Process engineering and energy transfer | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| -Records: general requirements, reasons for writing procedures in records, examples of records, batch production records, and quality Records. | ✓ | ✓ | | | ✓ | | | |
| Specifications of labels and testing procedures. | ✓ | ✓ | ✓ | | ✓ | ✓ | | |
| Qualification and validation: definitions, types, general requirements, validation master plan, | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| Self-inspection: definition, requirements, team, frequency, items for self-inspection. | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ |
| Personal sanitation and hygiene (self learning) | | | | | | | | |
| Sampling: definitions of different types of samples. | ✓ | ✓ | ✓ | | ✓ | ✓ | | |
| The difference between homogeneity and uniformity as well as sampling plan and procedure | | ✓ | ✓ | | ✓ | ✓ | | |

A- Practical part

| week No. | Course contents / K. elements (Practical part) | Domain 1 | | | Domain 2 | | | Domain 4 | |
|----------|--|----------|---------|---------|----------|---------|---------|----------|---------|
| | | 1.1.1.1 | 1.1.3.1 | 1.1.7.1 | 2.2.2.1 | 2.2.4.1 | 2.2.4.2 | 4.1.2.1 | 4.3.2.1 |
| 1 | Important definitions about GMP | ✓ | ✓ | ✓ | | | ✓ | | |



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| | | | | | | | | | |
|----|--|---|---|---|---|---|---|---|---|
| 2 | Introduction: What is I.P.Q.C ? | ✓ | ✓ | ✓ | | ✓ | | | ✓ |
| 3 | I.P.Q.C tests for liquid and semisolid dosage forms. | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 4 | I.P.Q.C tests for tablets: ▪ weight uniformity test, drug content and moisture content. | | ✓ | ✓ | ✓ | ✓ | | ✓ | |
| 5 | I.P.Q.C tests for tablets: ▪ Hardness test, disintegration and dissolution tests. | | ✓ | ✓ | ✓ | ✓ | | ✓ | |
| 6 | Dissolution study for different dosage forms. | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | |
| 7 | I.P.Q.C tests for injectables. | | | | ✓ | ✓ | | ✓ | |
| 8 | Quality control of suppositories: ▪ Physical aspects, mechanical strength, melting point test and liquefaction time test. | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | |
| 9 | Quality control of suppositories: ▪ Penetration test, content uniformity and dissolution test. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 10 | Troubleshooting problems during tablet manufacture: ▪ Defects related to process and defects related to excipients. | | | | | ✓ | ✓ | | |
| 11 | Troubleshooting problems during tablet manufacture: ▪ Defects related to machine and defects due to other factors. | | | | | ✓ | ✓ | | |



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| | | | | | | | | | | |
|----|--|--|--|--|--|--|---|---|--|--|
| 12 | Troubleshooting problems during capsule manufacture. | | | | | | ✓ | ✓ | | |
| 13 | Troubleshooting problems during suppository manufacture. | | | | | | ✓ | ✓ | | |

Matrix between course contents, methods of learning and assessment

A: Theoretical part

| Course Contents | Teaching and Learning Methods | | | | Assessment methods | | | |
|---|-------------------------------|-------------------------|---------------|---------------|--------------------|--------------------|---------|------|
| | Advanced Lecture | Computer aided learning | Self-learning | Presentations | Course Work | Practical/Tutorial | Written | Oral |
| Introduction about Quality Assurance and Good Manufacturing Practice: definitions, objectives and quality control as well as consequences of GMP violation | ✓ | ✓ | | | ✓ | ✓ | ✓ | ✓ |
| Personnel as a key part of GMP: general requirements, responsibilities of key personnel, consultant and authorized personnel as well as personnel training | ✓ | ✓ | | | ✓ | ✓ | ✓ | ✓ |



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| | | | | | | | | |
|--|---|---|---|--|---|---|---|---|
| Buildings as a key part of GMP: general requirements, clean room, sanitation and maintenance, lighting, sewage and other waste, and containment | √ | √ | √ | | √ | √ | √ | √ |
| Equipment as a key part of GMP: requirements of the different types of equipment | √ | √ | | | √ | | √ | √ |
| Materials as a key part of GMP: general requirements, starting materials and packaging materials. | | | | | | √ | | |
| Packaging and Labeling Control: definitions, requirements of labels and containers, as well as packaging operation | √ | √ | | | | | √ | √ |
| Documentation and records: aims, important documents and their requirements as well as specifications of labels. | √ | √ | | | | | √ | √ |
| Process engineering and energy transfer | √ | √ | | | | | √ | √ |
| -Records: general requirements, reasons for writing procedures in records, examples of records, batch production records, and quality Records. | √ | √ | | | | | √ | √ |



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| | | | | | | | | |
|---|---|---|---|---|--|--|---|---|
| Specifications of labels and testing procedures. | √ | √ | | | | | √ | √ |
| Qualification and validation: definitions, types, general requirements, validation master plan, | √ | √ | | | | | √ | √ |
| Self-inspection: definition, requirements, team, frequency, items for self-inspection. Personal sanitation and hygiene (self learning) | √ | √ | √ | √ | | | √ | √ |
| Sampling: definitions of different types of samples. | √ | √ | | √ | | | √ | √ |
| The difference between homogeneity and uniformity as well as sampling plan and procedure | √ | √ | | √ | | | √ | √ |

B-Practical part

| Course Contents | Teaching and Learning Methods | | | | | Assessment methods | | |
|---------------------------------|-------------------------------|--------------|-----------------|---------------|---------------|--------------------|---------|------|
| | Hybrid learning | Lab sessions | Problem solving | Self-learning | Presentations | Practical/Tutorial | Written | Oral |
| Important definitions about GMP | √ | √ | | | | √ | | |



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| | | | | | | | | |
|--|---|---|---|--|---|---|--|--|
| Introduction: What is I.P.Q.C ? | √ | √ | | | | √ | | |
| I.P.Q.C tests for liquid and semisolid dosage forms. | √ | √ | √ | | | √ | | |
| I.P.Q.C tests for tablets: ▪ Weight uniformity test, drug content and moisture content. | √ | √ | √ | | | √ | | |
| I.P.Q.C tests for tablets: ▪ Hardness test, disintegration and dissolution tests. | √ | √ | √ | | | √ | | |
| Dissolution study for different dosage forms. | √ | √ | √ | | | √ | | |
| I.P.Q.C tests for injectables. | √ | | √ | | | | | |
| Quality control of suppositories: ▪ Physical aspects, mechanical strength, melting point test and liquefaction time test. | √ | √ | √ | | | √ | | |
| Quality control of suppositories: ▪ Penetration test, content uniformity and dissolution test. | √ | √ | √ | | √ | √ | | |



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| | | | | | | | | |
|--|---|---|--|--|---|---|--|--|
| Troubleshooting problems during manufacture: <ul style="list-style-type: none"> Defects related to process and defects related to excipients. | √ | √ | | | √ | √ | | |
| Troubleshooting problems during manufacture: <ul style="list-style-type: none"> Defects related to machine and defects due to other factors. | √ | √ | | | √ | √ | | |

| | |
|--------------------|--|
| Course Coordinator | Ass. Prof. Amira Mohsen Motawee  |
| Head of Department | Prof. Dr. Dr. Irhan Ibrahim Abu Hashim  Date: 20 th Sept. 2023 |



بكالوريوس الصيدلة (فارم د – Pharm D)

Course Specification

Academic year: 2023/2024

| | |
|--|---|
| Course name: Drug marketing & Pharmacoeconomics | اسم المقرر: التسويق الدوائي واقتصاديات الدواء |
| Academic Level: Level 5 | المستوى الأكاديمي: الخامس |
| Scientific Department: Under Supervision of Clinical Pharmacy & Pharmacy Practice Department | القسم العلمي: تحت إشراف قسم الصيدلة الإكلينيكية والممارسة الصيدلانية |
| Head of Department: Prof. Dr. Mohamed El Hussein El Sebeay Shams | رئيس القسم: أ.د/ محمد الحسيني السبيعي شمس |
| Course Coordinator: Dr. Mona El Tamalawy | منسق المقرر: د/ منى الطملاوي |

| | |
|-------------------|-----------------|
| University | Mansoura |
|-------------------|-----------------|



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| | |
|---------------------------------------|--|
| Faculty | Pharmacy |
| Department offering the course | Pharmaceutics |
| Department supervising the course | Clinical Pharmacy and Pharmacy Practice Department |
| Program on which the course is given | B. Pharm. (PharmD) |
| Academic Level | Fifth level, first semester, 2023-2024 |
| Date of course specification approval | 7 th September, 2023 |

1- Basic Information: Course Data

| | |
|-------------------------|------------------------------------|
| Course Title | Drug Marketing & Pharmacoeconomics |
| Course Code | NP 513 |
| Prerequisite | Registration |
| Teaching Hours: Lecture | 2 |
| Tutorial | 0 |
| Total Credit Hours | 2 (Credit H) |

-Course Aims:

- 2.1. Introduce the major concepts in management and marketing in the different fields of pharmacy practice.
- 2.2. Understand the different application involved in different management system.
- 2.3. Organizing the different properties, applications of health economics and health technology assessment.
- 2.4. Overview on different types of economic evaluation and budget impact analysis.

Upon completing the course, the student will be able to dominate the following key elements

Domain 1- fundamental knowledge



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| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|---|
| 1.1.1 | 1.1.1.1 | Define the different basic knowledge of pharmaceutical marketing management. |
| 1.1.6 | 1.1.6.1 | Classify different methods of analysis and apply relevant scientific resources to make evidence-based cost-effective health care decisions. |
| 1.1.7 | 1.1.7.1 | Analyze evolving evidence, that may be applicable to solve pharmaceutical marketing problems. |

Domain 2: professional and ethical practice

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 2.1.1 | 2.1.1.1 | Organize and apply legal professional requirements to healthcare team in competitive analysis and sale force management. |
| 2.4.3 | 2.4.3.1 | Specify the factors affecting contribution to decision making processes for recognized drug-related and pharmaceutical care problems for values-based pricing. |
| 2.6.1 | 2.6.1.1 | Interpret the basic principles involved in managing financial, and customer behavior and marketing research. |
| 2.6.2 | 2.6.2.1 | Conduct guidelines of drug promotion, market segmentation, accounting and budget impact analysis. |



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Domain 4: personal practice

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 4.1.1 | 4.1.1.1 | Share decision-making activities with other pharmacy team members and non-pharmacy team members and apply effective time management skills. |
| 4.1.2 | 4.1.2.1 | Create or practices independent participation in the field of pharmacy and collaboration in the delivery of health services. |
| 4.3.2 | 4.3.2.1 | Practice self-learning to improve professional skills and developing a plan to meet these needs so promote critical thinking, decision-making, and time managing capabilities. |

4- Course Contents

| Week No. | Topics | Lecture Hours |
|----------|--|---------------|
| 1. | Marketing Basics and Concepts Definition of pharmaceutical marketing, Marketing builds Satisfying Exchange Relationships | 2 |
| 2. | Character Of Pharmaceutical Marketing | 2 |
| 3. | Product Life Cycle | 2 |
| 4. | Promotion and Advertising | 2 |
| 5. | Selling Process and Sales Cycle | 2 |
| 6. | Customer Response | 2 |
| 7. | Principles of Pharmacoeconomics Definition Financing (Costs) | 2 |
| 8. | Principles of Pharmacoeconomics Outcomes | 2 |



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| | | |
|------------|--|----|
| 9. | Marketing Strategy and Plan <ul style="list-style-type: none"> • Designing a customer driven value-driven marketing strategy and plan • Marketing Management Orientations • Marketing Mix. | 2 |
| 10. | Consequences (Outcomes) of Medical Care. | 2 |
| 11. | <ul style="list-style-type: none"> • Principles of Product Research and Development • Pharmaceutical Pricing Principles | 2 |
| 12. | Methods of Pharmacoeconomic Analysis: C. Economics: Cost-of-Illness (COI) Cost-Minimization Analysis (CMA) Cost-Benefit Analysis (CBA) Cost-Effectiveness Analysis (CEA) Cost-Utility Analysis (CUA) D. Humanistic: Quality of Life (QoL) | 2 |
| 13. | Principles of Place, Channel Systems, and Channel Specialists <ul style="list-style-type: none"> • <i>Challenges in managing place</i> • <i>Types of Distribution Channels</i> | 2 |
| 14. | Digital Marketing Overview: Types, Challenges, and Required Skills | 2 |
| 15 | Final written and oral exam | -- |

5-Teaching and Learning Methods:

| | Teaching and Learning Methods | week | K. elements to be addressed |
|--|-------------------------------|------|-----------------------------|
| | | | |



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| | | | |
|-----|--|-------------|---------------------------------------|
| 5.1 | Hybrid learning: | | 1.1.1.1/ 1.1.6.1/ 1.1.7.1 |
| | A. Advanced lecture incorporating group discussion, brain storming. | 1-6,8-12,14 | |
| | B. On line learning through My mans "Mansoura university "as recorded – video lectures | 7,13 | |
| 5.2 | Self-learning | 14 | 4.1.1.1/ 4.1.2.1/ 4.3.2.1 |
| 5.3 | Formative assignments | 9-10 | 2.1.1.1/ 2.4.3.1/ 2.6.1.1/ 2.6.2.1 |
| 5.4 | Class activity discussion / Brainstorming / problem solving | 14 | 1.1.1.1/ 1.1.6.1/ 1.1.7.1 |

6- Student Assessment:

Assessment Methods:

| | |
|------------------------|---|
| 1-Written exam | 1.1.1.1/ 1.1.6.1/ 1.1.7.1/ 2.1.1.1/ 2.4.3.1 /2.6.1.1/2.6.2.1/ 4.1.1.1/4.1.2.1/ 4.3.2.1 |
| 2-Formative Assessment | 1.1.1.1/ 1.1.6.1/ 1.1.7.1/ 2.1.1.1/ 2.4.3.1 /2.6.1.1/2.6.2.1 |

Assessment schedule

| | | |
|------------------|----------|---------------------------------------|
| Assessment 1 | Mid-term | 7 th -9 th week |
| Assessment 2 | Written | Starting from 15 th week |
| Other assessment | | -- |

Weighing of assessments

| | | |
|-------|---------------------------|------|
| 1 | Mid-term examination | 25% |
| 3 | Final-term examination | 75% |
| 5 | Other types of assessment | --- |
| Total | | 100% |

7- Facilities required for teaching and learning

| | |
|-----------|--|
| Classroom | Data show- Computers, Internet, Platform |
| Library | Books and Pharmacopoeia |

8- Matrix

Matrix 1. Course contents and course key elements

| Course contents | Outcomes | | | | | | | | | |
|---|------------------------|---------|---------|----------|---------|---------|---------|----------|---------|---------|
| | Domains / Key elements | | | | | | | | | |
| | Domain 1 | | | Domain 2 | | | | Domain 4 | | |
| | 1.1.1.1 | 1.1.6.1 | 1.1.7.1 | 2.1.1.1 | 2.4.3.1 | 2.6.1.1 | 2.6.2.1 | 4.1.1.1 | 4.1.2.1 | 4.3.2.1 |
| Marketing basics and concepts | √ | | | | | | | | | |
| Character of pharmaceutical marketing | √ | | | | | | | | | |
| Product life cycle | √ | | √ | | | | | | | |
| Promotion and advertising | √ | | √ | | | | √ | | | |
| Selling process and sales cycle | √ | | √ | | | | | | | |
| Customer response | √ | | | | | √ | | | | |
| Principles of Pharmacoeconomics Definition Financing (Costs) | | √ | | √ | √ | √ | √ | | | |
| Principles of | | √ | | √ | √ | √ | √ | | | |



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| | | | | | | | | | | | | |
|---|---|---|---|--|---|---|---|---|--|--|--|--|
| Pharmacoeconomics Outcomes | | | | | | | | | | | | |
| Marketing Strategy and Plan Marketing Mix | √ | | √ | | | | | | | | | |
| Consequences (Outcomes) of Medical Care. | | √ | | | √ | | | | | | | |
| Principles of Product Research and Development Pharmaceutical Pricing Principles | √ | | √ | | | √ | √ | √ | | | | |
| Methods of Pharmacoeconomic Analysis: C. Economics Cost-of-Illness (COI) Cost-Minimization Analysis (CMA) Cost-Benefit Analysis | | √ | √ | | √ | | √ | √ | | | | |



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| | | | | | | | | | | | | | |
|--|---|---|---|--|--|--|--|---|--|---|---|---|--|
| (CBA) Cost-Effectiveness Analysis (CEA) Cost-Utility Analysis (CUA) D. Humanistic: Quality of Life (QoL) | | | | | | | | | | | | | |
| Principles of Place, Channel Systems, and Channel Specialists | √ | √ | √ | | | | | √ | | | | | |
| Digital Marketing Overview: Types, Challenges, and Required Skills | | | | | | | | | | √ | √ | √ | |

| | | |
|------------------------|--------------------------------------|---------------------------|
| Course Contents | Teaching and Learning methods | Assessment methods |
|------------------------|--------------------------------------|---------------------------|



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| | Lecture | Hybrid leaning | Brain storming | Group discussion | Self-learning | Corse Work | Practical/ Tutorial | Written | Oral |
|--|---------|----------------|----------------|------------------|---------------|------------|------------------------|---------|------|
| Marketing basics and concepts | √ | | √ | √ | | √ | | √ | |
| Character of pharmaceutical marketing | √ | | √ | √ | | √ | | √ | |
| Product life cycle | √ | | √ | √ | | √ | | √ | |
| Promotion and advertising | √ | | √ | √ | | √ | | √ | |
| Selling process and sales cycle | √ | | √ | √ | | | | √ | |
| Customer response | √ | | √ | √ | | | | √ | |
| Principles of Pharmacoeconomics Definition Financing (Costs) | √ | √ | √ | √ | | | | √ | |
| Principles of Pharmacoeconomics Outcomes | √ | √ | √ | √ | | | | √ | |
| Marketing Strategy and Plan Marketing Mix | √ | | √ | √ | | | | √ | |
| Consequences (Outcomes) of Medical Care. | √ | | √ | √ | | | | √ | |



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| | | | | | | | | | |
|--|---|---|---|---|---|--|--|---|--|
| Principles of Product Research and Development | √ | | √ | √ | | | | √ | |
| Pharmaceutical Pricing Principles | | | | | | | | | |
| Methods of Pharmacoeconomic Analysis: C. Economics Cost-of-Illness (COI) Cost-Minimization Analysis (CMA) Cost-Benefit Analysis (CBA) Cost-Effectiveness Analysis (CEA) Cost-Utility Analysis (CUA) D. Humanistic: Quality of Life (QoL) | √ | | √ | √ | | | | √ | |
| Principles of Place, Channel Systems, and Channel Specialists | √ | | √ | √ | | | | √ | |
| Digital Marketing Overview: Types, Challenges, and Required Skills | √ | √ | √ | √ | √ | | | √ | |



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List of References

| No | Reference | Type |
|----|--|--------------------|
| 1. | Electronic book prepared by staff members | Course notes |
| 2. | Recorded videos prepared by staff members | Videos on platform |
| 3. | "Pharmacoeconomics : From theory to practice", (2 nd edition) Renee J.G. Arnold, CRC Press, New York , (August 2020). | Book |
| 4. | "Pharmaceutical Marketing Principles, Environment, and Practice" (1st edition), Eugene Mick Kolassa, James Greg Perkins, Bruce R Siecker, CRC Press, (2002). | Book |
| 5. | "Pharmacy Administration" (2nd edition), Beijing, China Shimin Yang, Medical Technique Press, (2006). | Book |
| 6. | https://www.researchgate.net/publication/325023106 http://www.sciencedirect.com / http://www.google.com / http://www.pubmed.com https://www.ekb.eg/web/guest/home | Websites |

| | |
|---------------------------|--|
| Course Coordinator | Dr.\ Mona El-Tamalawy <i>Mona M. Eltamalawy</i> |
| Head of Department | Prof. Dr. Mohamed El Husseiny El Sebeay Shams <i>Mohamed El Husseiny</i> |



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بكالوريوس الصيدلة (فارم د - Pharm D)

Course Specification

Academic year: 2023/2024

| | |
|---|---------------------------------------|
| Course name: Medicinal Chemistry III | اسم المقرر : كيمياء دوائية 3 |
| Academic Level: level 5 | الخامس المستوى الأكاديمي : |
| Scientific department: Medicinal Chemistry | القسم العلمي : الكيمياء الدوائية |
| Head of Department: Prof. Dr. Mohammed A. Mostafa | رئيس القسم : ا.د/ محمد أحمد مصطفى |
| Course Coordinator: Prof. Dr. Mohammed A. Mostafa | منسق المقرر : ا.د/ محمد أحمد مصطفى |



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| | |
|---------------------------------------|--|
| University | Mansoura |
| Faculty | Pharmacy |
| Department offering the course | Medicinal Chemistry Department |
| Program on which the course is given | Bachelor's Degree in Pharmacy - PharmD |
| Academic Level | Level 5, first semester, 2022/2023 |
| Date of course specification approval | 6 /9/2023 |

A. Basic Information: Course data:

| | |
|--------------------------------|------------------------------------|
| Course Title | Medicinal Chemistry III |
| Course Code | PD 513 |
| Prerequisite | Pharmaceutical organic chemistry 3 |
| Teaching credit Hours: Lecture | 2 |
| : Practical | 1 |
| Total Credit Hours | 3 |

B. Professional Information:

1. Course Aims:

This course enables the students to:

- Recognizing the relationships between the chemical structures of different chemotherapeutic drugs and biological activities.
- Understand the different mode of action of different classes of anticancer agents.
- Understand the different mode of action of different classes of antiviral agents.
- Understand the different mode of action of different classes of antifungal agents.
- Understand the cases that required the usage of certain class of antibacterial, anticancer and antifungal drugs.



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2- Course k. elements:

Upon completing the course, the student will be able to dominate the following key elements

Domain 1- fundamental knowledge

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|---|
| 1.1.2 | 1.1.2.1 | Use proper medical expression in pharmacy practice and remember international nonproprietary names (Generic name) of drugs. |
| 1.1.4 | 1.1.4.1 | Recognize the mode of action and therapeutic uses of chemotherapeutic, anticancer and endocrine-related drugs. |
| 1.1.7. | 1.1.7.1. | Collect and analyze medical information that can be applied in drug industry and patient care. |

Domain 2: Professional and Ethical Practice

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|---|
| 2.4.3. | 2.4.3.1. | List the various structural subclasses of chemotherapeutic drugs, anticancer and identify the representative pharmacophore in each pharmacological class. |
| 2.5.3 | 2.5.3.1 | Adapt the concepts of medicinal chemistry used in the systemic approach applied in drug development. |

Domain 3: Pharmaceutical Care

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|---|
| 3.2.1 | 3.2.1.1 | Detect the possible side effects and toxicity to a given drug molecule based on its structural features. |
| 3.2.5 | 3.2.5.1 | Counsel the patients about proper use of antibiotics and prescribe therapeutic recommendations based on an understanding of drug chemistry. |

Domain 4: Personal Practice:

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|---|
| 4.1.2 | 4.1.2.1 | Gather and analyse data, recognize problems independently and in participation with other drug chemistry experts to solve these problems. |
| 4.2.1 | 4.2.1.1 | Communicate efficiently in a clear scientific language when dealing with other health team related to the studied topics. |
| 4.3.2 | 4.3.2.1 | Practice self-learning to promote continuous professional development and lifelong learning. |



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3- Course Contents:

A-Theoretical part:

| Week No. | Topics | Lecture credit Hours |
|----------|---|----------------------|
| 1. | Anticancer drugs (part 1) | 2 |
| 2. | Anticancer drugs (part 2) | 2 |
| 3. | Introduction on Antibacterial agents & β -lactam antibiotics (Penicillins-part 1) | 2 |
| 4. | β -lactam antibiotics (Penicillins-part 2) & (Cephalosporins) | 2 |
| 5. | Non-classical β -lactam antibiotics & vancomycin | 2 |
| 6. | Antiviral drugs (part 1) | 2 |
| 7. | Antiviral drugs (part 2) | 2 |
| 8. | Sulfonamides & Macrolides | 2 |
| 9. | Tetracyclines & Aminoglycosides | 2 |
| 10. | Quinolones & Chloramphenicols | 2 |
| 11. | Antimalarial drugs | 2 |
| 12. | Antifungal drugs | 2 |
| 13. | <u>Self-learning</u> : Anthelmintic & antiprotozoal drugs | 2 |
| 14. | Revision and quiz | 2 |
| 15. | Final written and oral exam | - |

B- Practical part:

| Week No. | Practical topics | Practical credit hours |
|----------|---|------------------------|
| 1. | 1 st 3D visualization software section <input type="checkbox"/> Intro + Display mode + Measurements + Overlay | 1 |
| 2. | 2 nd 3D visualization software section <input type="checkbox"/> Energy minimization + Dihedral chart + deviation from plane | 1 |
| 3. | 3 rd 3D visualization software section <input type="checkbox"/> Charge calculation + Invert stereochemistry + Revision | 1 |
| 4. | 1 st Chemotherapy Case section <input type="checkbox"/> Anti-cancer agents | 1 |



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| | | |
|-----|---|---|
| 5. | 2 nd Chemotherapy Case section <input type="checkbox"/> Anti-viral agents (part 1) | 1 |
| 6. | 3 rd Chemotherapy Case section <input type="checkbox"/> Anti-viral agents (part 2) | 1 |
| 7. | 4 th Chemotherapy Case section <input type="checkbox"/> Sulfonamides & Quinolones | 1 |
| 8. | Midterm exam | - |
| 9. | 5 th Chemotherapy Case section <input type="checkbox"/> Beta-lactam. | 1 |
| 10. | 6 th Chemotherapy Case section <input type="checkbox"/> Tetracycline. | 1 |
| 11. | 7 th Chemotherapy Case section <input type="checkbox"/> Macrolides. | 1 |
| 12. | 8 th Chemotherapy Case section <input type="checkbox"/> Revision on antibiotics & mixed cases (Part I) | 1 |
| 13. | 9 th Chemotherapy Case section <input type="checkbox"/> Revision on antibiotics & mixed cases (Part II) | 1 |
| 14. | Computer + Case exams | 1 |

4- Teaching and learning Methods:

| No. | Teaching and learning Methods | Week No. | |
|-----|---|----------|---|
| 4.1 | Computer aided learning: a. Lectures using Data Show, Power Point Presentations b. Distance learning <ul style="list-style-type: none"> • Online learning through My Mans "Mansoura University "as recorded – video lectures • Interactive discussion through My Mans | 1-14 | 1.1.2.1, 1.1.4.1, 1.1.7.1, 2.4.3.1., 3.2.1.1, 3.2.5.1. |
| 4.2 | Self-learning | 13 | 4.3.2.1 |
| 4.3 | Practical session using computer software (3D visualization software) and tutorials | 1-3 | 1.1.2.1, 1.1.4.1, 2.4.3.1., 2.5.3.1, 3.2.1.1, 4.1.2.1, 4.3.2.1. |
| 4.4 | Class Activity: Group discussion offline and online. | 1-14 | 1.1.2.1, 1.1.4.1, 1.1.7.1, 2.4.3.1., 3.2.1.1, 3.2.5.1. |
| 4.5 | Problem – based learning and brainstorming | 1-14 | 1.1.2.1, 1.1.4.1, 2.4.3.1., 2.5.3.1, 3.2.1.1, 3.2.5.1, 4.2.1.1. |

5- Student Assessment:



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a- Assessment Methods:

| Assessment Methods | Key elements to be assessed |
|--|--|
| 1- Periodical (Mid-term exam / Course work) | 1.1.2.1, 1.1.4.1, 2.4.3.1., 2.5.3.1, 3.2.1.1, 4.1.2.1, 4.3.2.1. |
| 2- Practical exam using OSPE | 1.1.2.1, 1.1.4.1, 1.1.7.1, 2.4.3.1., 3.2.1.1, 3.2.5.1. |
| 3- Written exam | 1.1.2.1, 1.1.4.1, 2.4.3.1., 2.5.3.1, 3.2.1.1 |
| 4- Oral exam | 1.1.2.1, 1.1.4.1, 2.4.3.1., 2.5.3.1, 3.2.1.1, 3.2.5.1, 4.2.1.1. |

b- Assessment schedule:

| | | |
|--------------|---------------------------------------|------------------------|
| Assessment 1 | Periodical (Mid-term/ Course work) | 7-9 th week |
| Assessment 2 | Practical exam (OSPE) | 14 th week |
| Assessment 3 | Written exam | 15 th week |
| Assessment 4 | Oral exam | 15 th week |

c- Weighing of assessment:

| | | |
|-------|------------------------------------|------|
| 1 | Periodical (Mid-term/ Course work) | 15% |
| 2 | Practical exam | 25% |
| 3 | Written exam | 50% |
| 4 | Oral exam | 10% |
| Total | | 100% |

6- Facilities required for teaching and learning

| | |
|-------------------------|--|
| - Class room | Data show- Computers, Internet. (Available) |
| - Laboratory facilities | White board – Computer Software (3D visualization software). (Available) |

7- List of References

| No | Reference | Type |
|----|---|--------------|
| 1. | Electronic book prepared by staff members | Course notes |



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| | | |
|----|--|------------------|
| 2. | "Foye's Principles of Medicinal Chemistry", 8th edition, (David A. Williams, Thomas L. Lemke & William O. Foye, Editors), Lippincott Williams & Wilkins, 2017 | Essential Book |
| 3. | "Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry" 12th Edition, (J. H. Block and J. M. Beale Jr, Editors), Lippincott Williams & Wilkins, Philadelphia, PA, 2013 | Recommended Book |
| 4. | "An Introduction to Medicinal Chemistry", 6 th Revised Edition, (Graham L. Patrick), Oxford University Press, USA, 2017. | Recommended Book |
| 6. | http://www.sciencedirect.com/ http://www.google scholar.com/ http://www.pubmed.com/ https://www.ekb.eg | Website |



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8-Matrix:

Matrix 1. Course contents and course key elements

A) Theoretical part:

| Course contents / K. elements | Domain 1 | | | Domain 2 | | Domain 3 | Domain 4 |
|--|----------|---------|---------|----------|---------|----------|----------|
| | 1.1.2.1 | 1.1.4.1 | 1.1.7.1 | 2.4.3.1 | 2.5.3.1 | 3.2.1.1 | 4.3.2.1 |
| Anticancer drugs (part 1) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Anticancer drugs (part 2) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Introduction on Antibacterial agents & β- lactam antibiotics (Penicillins-part 1) | ✓ | ✓ | ✓ | ✓ | | | |
| β-lactam antibiotics (Penicillins-part 2) & (Cephalosporins) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Non-classical β-lactam antibiotics & vancomycin | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Antiviral drugs (part 1) | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| Antiviral drugs (part 2) | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| Sulfonamides & Macrolides | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| Tetracyclines & Aminoglycosides | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| Quinolones & Chloramphenicols | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| Antimalarial drugs | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| Antifungal drugs | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| <u>Self-learning</u> : Anthelmintic & antiprotozoal drugs | | | | | | | ✓ |



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B) Practical part:

| Course contents/ K. elements | Domain 1 | | | Domain 2 | | Domain 3 | | Domain 4 | | |
|---|----------|---------|---------|----------|---------|----------|---------|----------|----------|---------|
| | 1.1.2.1 | 1.1.4.1 | 1.1.7.1 | 2.4.3.1 | 2.5.3.1 | 3.2.1.1 | 3.2.5.1 | 4.1.2.1 | 4.2.1.1. | 4.3.2.1 |
| 1 st 3D visualization software section <input type="checkbox"/> Intro + Display mode + Measurements + Overlay | ✓ | | ✓ | | ✓ | | | ✓ | ✓ | |
| 2 nd 3D visualization software section <input type="checkbox"/> Energy minimization + Dihedral chart + deviation from plane | ✓ | | ✓ | | ✓ | | | ✓ | ✓ | |
| 3 rd 3D visualization software section <input type="checkbox"/> Charge calculation + Invert stereochemistry + Revision | ✓ | | ✓ | | | | | ✓ | ✓ | |
| 1 st Chemotherapy Case section <input type="checkbox"/> Anti-cancer agents | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | |
| 2 nd Chemotherapy Case section <input type="checkbox"/> Anti-viral agents (part 1) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | |
| 3 rd Chemotherapy Case section <input type="checkbox"/> Anti-viral agents (part 2) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 4 th Chemotherapy Case section <input type="checkbox"/> Sulfonamides & Quinolones | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 5 th Chemotherapy Case section <input type="checkbox"/> Beta-lactam. | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 6 th Chemotherapy Case section <input type="checkbox"/> Tetracycline. | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | | | ✓ |



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| | | | | | | | | | | |
|--|---|---|--|---|---|---|---|---|---|---|
| 7 th Chemotherapy Case section ☐ Macrolides. | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | | | ✓ |
| 8 th Chemotherapy Case section ☐ Revision on antibiotics/mixed cases | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

Matrix 2. Between course contents, methods of learning, and assessment

A) Theoretical part:

| Course Contents | Teaching and Learning methods | | | | Assessment methods | | |
|--|-------------------------------|----------------|----------------------|---------------|--------------------|---------|------|
| | Lecture | Hybrid leaning | Comp. aided learning | Self-learning | Corse Work | Written | Oral |
| Anticancer drugs (part 1) | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Anticancer drugs (part 2) | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Introduction on Antibacterial agents & β-lactam antibiotics (Penicillins-part 1) | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| β-lactam antibiotics (Penicillins-part 2) & (Cephalosporins) | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Non-classical β-lactam antibiotics & vancomycin | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Antiviral drugs (part 1) | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Antiviral drugs (part 2) | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Sulfonamides & Macrolides | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Tetracyclines & Aminoglycosides | ✓ | ✓ | ✓ | | | ✓ | ✓ |
| Quinolones & Chloramphenicols | ✓ | ✓ | ✓ | | | ✓ | ✓ |
| Antimalarial drugs | ✓ | ✓ | ✓ | | | ✓ | ✓ |



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| | | | | | | | |
|--|---|---|---|---|--|---|---|
| Antifungal drugs | ✓ | ✓ | ✓ | | | ✓ | ✓ |
| Self-learning: Anthelmintic & antiprotozoal drugs | | | ✓ | ✓ | | | ✓ |

B) Practical part:

| Course Contents | Teaching and Learning methods | | | | Assessment methods |
|--|-------------------------------|----------------------|--------------|---------------|-----------------------------|
| | Hybrid learning | Comp. aided learning | Lab sessions | Self-learning | Practical/Tutorial/Activity |
| 1 st 3D visualization software section □ Intro + Display mode + Measurements + Overlay | ✓ | ✓ | ✓ | | ✓ |
| 2 nd 3D visualization software section □ Energy minimization + Dihedral chart + deviation from plane | ✓ | ✓ | ✓ | | ✓ |
| 3 rd 3D visualization software section □ Charge calculation + Invert stereochemistry + Revision | ✓ | ✓ | ✓ | | ✓ |
| 1 st Chemotherapy Case section □ Anti-cancer agents | ✓ | ✓ | ✓ | | ✓ |
| 2 nd Chemotherapy Case section □ Anti-viral agents (part 1) | ✓ | ✓ | ✓ | | ✓ |
| 3 rd Chemotherapy Case section □ Anti-viral agents (part 2) | ✓ | ✓ | ✓ | | ✓ |
| 4 th Chemotherapy Case section □ Sulfonamides & Quinolones | ✓ | ✓ | ✓ | ✓ | ✓ |
| 5 th Chemotherapy Case section □ Beta-lactam. | ✓ | ✓ | ✓ | ✓ | ✓ |
| 6 th Chemotherapy Case section □ Tetracycline. | ✓ | ✓ | ✓ | ✓ | ✓ |
| 7 th Chemotherapy Case section: □ Macrolides. | ✓ | ✓ | ✓ | ✓ | ✓ |
| 8 th Case section □ Revision on antibiotics/mixed cases Part I | ✓ | ✓ | ✓ | ✓ | ✓ |



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| | | | | | |
|---|---|---|---|---|---|
| 9 th Case section <input type="checkbox"/> Revision on antibiotics/mixed cases Part II | ✓ | ✓ | ✓ | ✓ | ✓ |
|---|---|---|---|---|---|

| | |
|---------------------------|--|
| Course Coordinator | Prof. Dr. Mohamed Ahmed Ahmed Mostafa |
| Head of Department | Prof. Dr. Mohamed Ahmed Ahmed Mostafa |

Date: 6/9/2022



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بكالوريوس الصيدلة فارم د – PharmD

Course Specification

Academic year: 2023/2024

| | |
|--|--------------------------------------|
| Course Name: Drug Design | اسم المقرر : تصميم الأدوية |
| Academic Level: level 5 | الخامس المستوى الأكاديمي : |
| Scientific Department: Medicinal Chemistry | القسم العلمي : الكيمياء الدوائية |
| Head of Department: Prof. Dr. Mohamed Ahmed Moustafa | رئيس القسم : أ.د/ محمد أحمد مصطفى |
| Course Coordinator: Prof. Mahmoud Bakr | منسق المقرر : أ.د/ محمود بكر |



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| | |
|---------------------------------------|-------------------------------------|
| University | Mansoura |
| Faculty | Pharmacy |
| Department offering the course | Medicinal Chemistry |
| Department supervising the course | Medicinal Chemistry |
| Program on which the course is given | Bachelor in Pharmacy- PharmD |
| Academic Level | Level 5, Second Semester, 2023/2024 |
| Date of course specification approval | 6/9/2023 |

A. Basic Information: Course data:

| | |
|--------------------------------|--------------------------------|
| Course Title | Drug Design |
| Course Code | PD-524 |
| Prerequisite | Medicinal Chemistry-1 (PD-411) |
| Teaching Credit Hours: Lecture | 2 hr |
| : Practical | 1 hrs |
| Total Credit Hours | 3 Credit Hours |

B. Professional Information:

1- Course Aims:

1. Revealing the importance of drug design in Pharmacy curriculum.
2. Providing a broad introduction to drug discovery and development process.
3. Enhancing students' appreciation of the fundamental concepts of drug discovery process.
4. Covering the different strategies adopted in drug design process.
5. Grasping the basic principles and practical experience of different methods of drug design.
6. Presenting various examples of drugs designed based on application of different approaches.
7. Offering the opportunity to use molecular modeling software to design new molecules.



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2- Course Key Elements:

Upon completing the course, the student will be able to dominate the following key elements:

Domain 1- Fundamental Knowledge

| Program K. Element No. | Course K. Element No. | Course K. Element |
|------------------------|-----------------------|--|
| 1.1.2 | 1.1.2.1 | Use of appropriate terminology related to drug design and development. |
| 1.1.3 | 1.1.3.1 | Review the various strategies applied in both classical and rational drug design. |
| 1.1.4 | 1.1.4.1 | Relate the structural and metabolic profiles of drugs to their onset, duration and action. |
| 1.1.6 | 1.1.6.1 | Evaluate case history of the development of drugs from different sources. |

Domain 2: Professional and Ethical Practice

| Program K. Element No. | Course K. Element No. | Course K. Element |
|------------------------|-----------------------|--|
| 2.2.1 | 2.2.1.1 | Employ the computer and molecular docking tools in designing new molecular structures. |
| 2.4.3 | 2.4.3.1 | Predict the effect of structural manipulation on the pharmacokinetic/ pharmacodynamic properties of drugs. |
| | 2.4.3.2 | Interpret the factors required to design new molecules for particular target. |
| 2.5.1 | 2.5.1.1 | Fulfill regulatory strategy for authorization of emerging medicinal plant |

Domain 3: Pharmaceutical Care

| Program K. Element No. | Course K. Element No. | Course K. Element |
|------------------------|-----------------------|--|
| 3.2.1 | 3.2.1.1 | Relate the effect of the different physico-chemical parameters to drugs' actions, and justify the reasons to design new derivatives. |

Domain 4: Personal Practice:

| Program K. Element No. | Course K. Element No. | Course K. Element |
|------------------------|-----------------------|--|
| 4.1.2 | 4.1.2.1 | Promote applicable critical thinking and problem solving capabilities. |
| | 4.1.2.2 | Work collaboratively with other members. |
| 4.2.2 | 4.2.2.1 | Use the existing technology to exhibit effective presentations. |



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| | | |
|-------|---------|---|
| 4.3.2 | 4.3.2.1 | Perform independent learning to promote self-development. |
|-------|---------|---|

3- Course Contents:

A. Theoretical Part:

| Week No. | Topics | Lecture credit Hours |
|-------------------------|--|----------------------|
| 1 | Definitions / Drug Discovery/Development / Current situation/ Sources of drugs / Classical Design approaches | 2 |
| 2 | Association & Skeletal variation | 2 |
| 3 | Bioisosteric substitution | 2 |
| 4 | Alteration in stereochemistry and Chiral Switching | 2 |
| 5 | Design based on Drug Metabolism | 2 |
| 6 | Modification of duration of action | 2 |
| 7 | Soft drugs | 2 |
| 8 | Prodrugs (part one) | 2 |
| 9 | Prodrugs (Continue part two) | 2 |
| 10 | Carrier-linked and Bioprecursor Prodrugs | 2 |
| 11 | Mathematical and Biological approaches Drug Design | 2 |
| 12 | Computer-Aided Drug Design (CADD) (Part I) | 2 |
| 13 | Computer-Aided Drug Design (CADD) (Part II) | 2 |
| 14 | Remdesivir. An Antiviral ProTide for COVID-19 (Self-Learning Topic) | 2 |
| 15 | Compensatory and alternative lecture | 2 |
| 16 | Revision and quiz | 2 |
| Starting from 17 | Final Written and Oral Exam | -- |

B. Practical Part:

| Week No. | Practical topics | Practical credit hours |
|----------|--|------------------------|
| 1. | Theoretical introduction on Molecular Docking (Continue, part one) | 1 |
| 2. | Theoretical introduction on Molecular Docking (Continue, part two) | 1 |



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| | | |
|-----|--|----|
| 3. | Theoretical introduction on Molecular Docking (Continue, part three) | 1 |
| 4. | Introduction on MOE program | 1 |
| 5. | Creation of a Database file of chemical structures | 1 |
| 6. | Drawing and preparation of the expected receptor protein | 1 |
| 7. | Creation of Dummy atoms for docking & Docking run | 1 |
| 8. | Midterm exam | - |
| 9. | Docking result interpretation (part one) | 1 |
| 10. | Docking result interpretation (part two) | 1 |
| 11. | Docking result interpretation (part three) | 1 |
| 12. | Docking result interpretation (part four) | 1 |
| 13. | Application on MOE program (Part I) | 1 |
| 14. | Application on MOE program (Part II) | 1 |
| 15. | Revision and activity | 1 |
| 16. | Sheet / and Practical exam | -- |

4- Teaching and learning Methods:

| No. | Teaching and learning Methods | Week No. | K. elements to be addressed |
|-----|--|----------|--|
| 4.1 | Computer-aided learning <i>via</i> Lectures presented at the classroom to attendant students, using Data Show and Power Point. | 1-16 | 1.1.2.1, 1.1.3.1, 1.1.4.1, 2.2.1, 2.4.3.2, 2.4.3.3, 3.2.1.1, 4.1.2.2, 4.2.2.1 |
| 4.2 | Computer-aided Online learning <i>via</i> Lectures presented through interactive sessions using Microsoft Teams. | 1-16 | 1.1.3.1, 1.1.4.1, 1.1.6.2, 2.2.1, 2.4.3.1, 2.4.3.2, 2.5.1.1., 3.2.1.1, 4.1.2.1, 4.1.2.2, 4.2.2.1 |
| 4.3 | Computer-aided Distance learning <i>via</i> Lectures presented as videos uploaded on the University Portal. "My Mans". | 1-16 | 1.1.3.1, 1.1.4.1, 1.1.6.2, 2.2.1, 2.4.3.1, 2.4.3.2, 2.5.1.1., 3.2.1.1, 4.1.2.1, 4.1.2.2, 4.2.2.1 |
| 4.4 | Practical Sessions using facilities as computers, molecular modeling software and videos. | 1-16 | 1.1.2.1, 1.1.3.1, 1.1.6.2, 2.2.1, 2.4.3.1, 2.4.3.3, 2.5.1.1., 3.2.1.1, 4.1.2.1, 4.1.2.2 |



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| | | | |
|------|---|------|---|
| 4.5 | Class activity. | 1-16 | 1.1.2.1, 1.1.3.1, 1.1.6.2, 2.2.1.1, 2.4.3.1, 2.4.3.3, 3.2.1.1, 4.1.2.1, 4.1.2.2 |
| 4.6 | Interactive Discussion sessions using Chat room on the University Portal "My Mans". | 1-16 | 1.1.2.1, 1.1.3.1, 1.1.4.1, 1.1.6.2, 2.2.1, 2.4.3.1, 2.4.3.2, 2.5.1.1., 3.2.1.1, 4.1.2.1, 4.1.2.2, 4.2.2.1 |
| 4.7. | Online Research Assignments to enhance students' self-learning. | 14 | 4.3.2.1. |

5- Student Assessment:

d- Assessment Methods:

| Assessment Methods | K elements to be assessed |
|-------------------------------|-------------------------------------|
| 1-Written exam | 1.1.3.1; 1.1.4.1; 2.4.3.1; 3.2.1.1 |
| 2-Practical exam | 2.2.1.1; 2.4.3.1; 2,4,3,2; 2.5.1.1. |
| 3-Oral | 4.1.2.1; 4.3.2.1 |
| 4- Periodical (Mid-term exam) | 1.1.2.1; 1.1.3.1; 1.1.6.1; 4.2.2.1 |

b. Assessment schedule

| | | |
|--------------|------------------------------------|-------------------------------------|
| Assessment 1 | Periodical (Mid-term exam) | 7-9 th week |
| Assessment 2 | Practical examination and tutorial | 16 th week |
| Assessment 3 | Written exam | Starting from 17 th week |
| Assessment 4 | Oral exam | Starting from 17 th week |

c. Weighing of assessments

| | | |
|-------|--|------|
| 1 | Periodical (Mid-term) exam / Course work | 15% |
| 2 | Practical examination and tutorial | 25% |
| 3 | Final-term written examination | 50% |
| 4 | Oral examination | 10% |
| Total | | 100% |

6 Facilities required for teaching and learning

| | |
|-------------------------|---|
| -Class room | New Computers and Internet facilities. |
| - Laboratory facilities | Original Chem Draw software. Original Molecular Modeling software. |
| - Library | ----- |



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8- List of References

| No | Reference | Type |
|----|--|--------------------|
| 1. | Lectures Notes and Lab. Manual. | Software |
| 3. | Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry. 12 th Edition, By J M. Beale Jr, J Block (Editors) Publisher: Lippincott–Raven Publishers, Philadelphia, 2013 ISBN-13: 978-0781779296. ISBN-10: 0781779294 | Books |
| 4. | Recorded videos | Videos on platform |
| 5. | http://www.sciencedirect.com / http://www.google scholar.com / http://www.pubmed.com https://www.ekb.eg | websites |
| 6. | Letters in Drug Design & Discovery. Bentham Science Drug Design Development & Therapy. Dove Medical Press Ltd. Chemical Biology & Drug Design. Wiley/ Blackwell (UK) | Periodicals |



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9- Matrix of course content versus course k. elements:

| Course contents | Course Key Elements | | | | | | | | | | | | |
|--|---------------------|---------|---------|---------|-----------|---------|---------|----------|-----------|-----------|---------|---------|---------|
| | Domain: 1 | | | | Domain: 2 | | | | Domain: 3 | Domain: 4 | | | |
| | 1.1.2.1 | 1.1.3.1 | 1.1.4.1 | 1.1.6.1 | 2.2.1.1 | 2.4.3.1 | 2.4.3.2 | 2.5.1.1. | 3.2.1.1 | 4.1.2.1 | 4.1.2.2 | 4.2.2.1 | 4.3.2.1 |
| A) Theoretical part | | | | | | | | | | | | | |
| Definitions / Drug Discovery/Development / Current situation/ Sources of drugs / Classical Design approaches | √ | | | √ | | | | | √ | | | | |
| Association & Skeletal variation | | √ | √ | | | √ | | √ | | | | | |
| Bioisosteric substitution | | √ | √ | | | √ | | √ | | | | | |
| Alteration in stereochemistry and Chiral Switching | | √ | | | | | | | √ | | | | |
| Design based on Drug Metabolism | | √ | | | | | | | √ | | | | |
| Modification of duration of action | | √ | √ | | | √ | | √ | √ | | | | |
| Soft drugs | | √ | √ | | | √ | | √ | √ | | | | |
| Prodrugs (part one) | | √ | √ | | | √ | | √ | √ | | | | |



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| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|--|---|
| Prodrugs (Continue part two) | | √ | √ | | | √ | | √ | √ | √ | | | |
| Carrier-linked and Bioprecursor Prodrugs | | √ | √ | | | √ | | √ | √ | √ | | | |
| Mathematical and Biological approaches Drug Design | √ | √ | | | √ | | √ | √ | √ | | | | |
| Computer-Aided Drug Design (CADD) (Part I) | √ | √ | | | √ | | √ | √ | √ | | | | |
| Computer-Aided Drug Design (CADD) (Part II) | √ | √ | | | √ | | √ | √ | √ | | | | |
| Remdesivir. An Antiviral ProTide for COVID-19 (Self-Learning Topic) | | | | | | | | | | | √ | | √ |
| B) Practical part | | | | | | | | | | | | | |
| Theoretical introduction on Molecular Docking (Continue, part one) | √ | √ | | | | | | | | | | | |
| Theoretical introduction on Molecular Docking (Continue, part two) | | √ | | √ | | | | | | | | | |
| Theoretical introduction on Molecular Docking (Continue, part three) | √ | √ | | √ | | | | | | | | | |
| Introduction on MOE program | | √ | | | √ | √ | | | | | | | |
| Creation of a Database file of chemical structures | | √ | | | √ | √ | | √ | | | √ | | √ |
| Drawing and preparation of the expected receptor protein | √ | | | √ | √ | √ | √ | √ | | | √ | | √ |



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| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|--|---|---|---|---|
| Creation of Dummy atoms for docking & Docking run | | √ | | √ | √ | | √ | | | | √ | | √ |
| Docking result interpretation (part one) | √ | | √ | | √ | √ | √ | | | | √ | | √ |
| Docking result interpretation (part two) | √ | | √ | | √ | √ | | √ | | | √ | | √ |
| Docking result interpretation (part three) | √ | | √ | | √ | √ | √ | √ | | | | | |
| Docking result interpretation (part four) | √ | | √ | | √ | √ | √ | √ | | | | | |
| Application on MOE program Part I and II | √ | | √ | | √ | √ | √ | √ | | √ | | √ | √ |



10- Matrix 2. between course contents, methods of learning and assessment

| A) Theoretical Part: | | | | | | | | | | |
|--|-------------------------------|----------------|--------------|---------------------------------|--------|---------------|--------------------|--------------------|---------|------|
| Course Contents | Teaching and Learning Methods | | | | | | Assessment methods | | | |
| | Lecture | Online lecture | Lab sessions | Interactive Discussion sessions | Videos | Self-learning | Mid-term | Practical/Tutorial | Written | Oral |
| Definitions / Drug Discovery/Development / Current situation/ Sources of drugs / Classical Design approaches | √ | | | | | | √ | | √ | √ |
| Association & Skeletal variation | √ | | | | | | √ | | √ | √ |
| Bioisosteric substitution | √ | | | | | | √ | | √ | √ |
| Alteration in stereochemistry and Chiral Switching | √ | | | √ | √ | | √ | | √ | √ |
| Design based on Drug Metabolism | √ | | | | | | | | √ | √ |



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| | | | | | | | | | | |
|--|---|---|--|---|---|---|--|--|---|---|
| Modification of duration of action | √ | √ | | | | | | | √ | √ |
| Soft drugs | √ | | | √ | √ | | | | √ | √ |
| Prodrugs (part one) | √ | √ | | | | | | | √ | √ |
| Prodrugs (Continue part two) | √ | | | | | | | | √ | √ |
| Carrier-linked and Bioprecursor Prodrugs | √ | √ | | | | | | | √ | √ |
| Mathematical and Biological approaches Drug Design | √ | | | √ | √ | | | | √ | √ |
| Computer-Aided Drug Design (CADD) (Part I) | √ | √ | | | | | | | √ | √ |
| Computer-Aided Drug Design (CADD) (Part II) | √ | √ | | | | | | | √ | √ |
| Remdesivir. An Antiviral ProTide for COVID-19 (Self-Learning Topic) | | | | √ | √ | √ | | | √ | √ |

B) Practical Part:

| Course Contents | Teaching and Learning Methods | Assessment methods |
|-----------------|-------------------------------|--------------------|
|-----------------|-------------------------------|--------------------|



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Pharm D Program
Course Specification
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| | Lecture | Online lecture | Class activity | Lab sessions | Interactive Discussion sessions | Videos | Self-learning | Mid-term | Practical/Tutorial | Written | Oral |
|--|---------|----------------|----------------|--------------|---------------------------------|--------|---------------|----------|--------------------|---------|------|
| Theoretical introduction on Molecular Docking (Continue, part one) | | | √ | √ | √ | √ | | | √ | | |
| Theoretical introduction on Molecular Docking (Continue, part two) | | | √ | √ | √ | √ | | | √ | | |
| Theoretical introduction on Molecular Docking (Continue, part three) | | | √ | √ | √ | √ | | | √ | | |
| Introduction on MOE program | | | √ | √ | √ | √ | | | √ | | |
| Creation of a Database file of chemical structures | | | √ | √ | √ | √ | | | √ | | |
| Drawing and preparation of the expected receptor protein | | | √ | √ | √ | √ | | | √ | | |
| Creation of Dummy atoms for docking & Docking run | | | √ | √ | √ | √ | | | √ | | |
| Docking result interpretation (part one) | | | √ | √ | √ | √ | | | √ | | |
| Docking result interpretation (part two) | | | √ | √ | √ | √ | | | √ | | |
| Docking result interpretation (part three) | | | √ | √ | | √ | | | √ | | |
| Docking result interpretation (part four) | | | √ | √ | | √ | | | √ | | |
| Application on MOE program Part I and II | | | √ | √ | | √ | | | √ | | |



**Mansoura University
Faculty of Pharmacy
Quality Assurance Unit
Pharm D Program
Course Specification
2023- 2024**



| | |
|---------------------------|---|
| Course Coordinator | Prof. Dr. Mahmoud Bakr |
| |  |
| Head of Department | Prof. Dr. Mohamed Ahmed Moustafa |
| |  |



Course Specification
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بكالوريوس الصيدلة (فارم د – Pharm D)

Course Specification

Academic year: 2023/2024

| | |
|---|---|
| Course name: Toxicology and forensic chemistry | اسم المقرر : السموم والكيمياء الشرعية |
| Academic Level: Fifth | المستوى الأكاديمي : الخامس |
| Scientific department: Pharmacology and toxicology | القسم العلمي : الادوية والسموم |
| Head of Department: Prof Dr Manar A Nader | رئيس القسم : إ.د/ منار احمد نادر |
| Course Coordinator: Prof. Dr. Mohammed S. El-Awady | منسق المقرر : إ.د/ محمد شعبان حسن العوضي |



Course Specification
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| | |
|--|--|
| University | Mansoura |
| Faculty | Pharmacy |
| Department offering the course | Pharmacology and Toxicology |
| Department supervising the course | Pharmacology and Toxicology |
| Program on which the course is given | Bachelor in Pharmacy- Pharm D |
| Academic Level | Level 5, Second semester, 2023/2024 |
| Date of course specification approval | 2023/9/18 |

A. Basic Information: Course data:

| | |
|---|--|
| Course Title | Toxicology and forensic chemistry |
| Course Code | PH 528 |
| Prerequisite | - |
| Teaching credit Hours: Lecture | 2 |
| Teaching Credit Hours: Practical/ tutorial | 1 |
| Total Credit Hours | 3 |

B. Professional Information:

1. Course Aims:

This course enables the students to:

Introduce the students to the basic principles of toxicology

Introduce the students to the different aspects of the toxic effect of different pharmacological classes of drugs

Emphasize the importance of dealing with and metal and different toxin



2- Course k. elements:

Upon completing the course, the student will be able to dominate the following key elements

Domain 1- Fundamental Knowledge

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 1.1.8 | 1.1.8.1 | Use health informatics to improve the quality of health and nutritional care, manage resources and optimize patient safety and understand metabolic disorders. |

Domain 2: Professional and Ethical Practice

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 2.4.1 | 2.4.1.1 | Evaluate proper procedures for handling and applications of poisons to discard any harm to public |
| 2.4.3 | 2.4.3.1 | Recognize to decision making processes for recognized drug-related and pharmaceutical care problems |
| 2.4.4 | 2.4.4.1 | Contribute toxicity profiles of chemicals and other xenobiotics and investigate poisons in biological samples. |

Domain 3: Pharmaceutical Care

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 3.2.4 | 3.2.4.1 | Recommend appropriate information about untoward and toxicity of medicinal agents and other xenobiotics including possible sources, signs, symptoms and treatment options. |
| 3.2.6 | 3.2.6.1 | Provide public awareness on rational use of drugs, vaccination, drug abuse and misuse, and safe handling of hazardous products to minimize personal exposure and reducing environmental contamination. |
| 3.2.7 | 3.2.7.1 | Identify the occurrence of a medication incident, adverse drug event and respond effectively to alleviate harm and prevent reoccurrence. |



Domain 4: Personal Practice:

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 4.3.2 | 4.3.2.1 | Promote continuous professional development by practicing self and independent learning. |

3- Course Contents:

| Week No. | Topics | Lecture credit Hours |
|----------|--|----------------------|
| 1 | Introduction | 2 |
| 2 | Target organ toxicity – Neurotoxicity, Pulmonary toxicity and Cardiac Toxicity | 2 |
| 3 | Target organ toxicity — Hepatotoxicity and Nephrotoxicity | 2 |
| 4 | Heavy Metal toxicity | 2 |
| 5 | Natural Toxins: Microbial toxins and Mycotoxins | 2 |
| 6 | Natural Toxins: Plant, animal and marine toxins | 2 |
| 7 | Genotoxicity, Mutagenesis, Teratogenesis and Carcinogenesis | 2 |
| 8 | Drugs of Abuse | 2 |
| 9 | Forensic Toxicology | 2 |
| 10 | Management of Poisoning | 2 |
| 11 | Environmental toxicology – Food Pollution | 2 |
| 12 | Environmental toxicology –Water, Soil and Air Pollution | 2 |
| 13 | Occupational toxicology (part 1) | 2 |
| 14 | Occupational toxicology (part 2)(self-learning) | 2 |



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| | | |
|------------------|--|------------------------|
| 15 | Compensatory and advanced lecture | 2 |
| 16 | Revision and quiz | 2 |
| Starting from 17 | Final written and oral exam | - |
| Week No. | Practical topics | Practical credit hours |
| 1 | CNS stimulant toxicity | 1 |
| 2 | Toxicity of Organophosphorus insecticides | 1 |
| 3 | Toxic Gases : Cyanide toxicity | 1 |
| 4 | Local Toxicity: Caustics: inorganic acids and alkali | 1 |
| 5 | Toxins affecting Blood: Hemolytic agents | 1 |
| 6 | Analgesics Toxicity: Aspirin and Paracetamol Toxicity | 1 |
| 7 | Alcohol Toxicity: Ethanol, Methanol and Glycols | 1 |
| 8 | Midterm exam | - |
| 9 | Nicotine toxicity | 1 |
| 10 | Sedatives and Hypnotics Toxicity: Barbiturates and Benzodiazepines | 1 |
| 11 | Drug and Poison Information Centers | 1 |
| 12 | Clinical Cases on Management of Toxicity (part 1) | 1 |
| 13 | Clinical Cases on Management of Toxicity (part 2) | 1 |
| 14 | Anabolic steroid toxicity | 1 |
| 15 | Revision and activity | 1 |
| 16 | Sheet / and Practical exam | 1 |

4- Teaching and learning Methods:

| Teaching and Learning Method | | Week number | K. elements to be addressed |
|------------------------------|---|-------------|--|
| 4.1 | Advanced lectures: Lectures using Data show, power Point presentations Brain storming | 1-16 | 1.1.8.1, 2.4.1.1, 2.4.3.1, 2.4.4.1, 3.2.4.1, 3.2.6.1, 3.2.7.1, 4.3.2.1 |



| | | | |
|-----|---|------|--|
| | Group discussion | | |
| 4.2 | Hybrid learning Online learning through my Mans "Mansoura university " Interactive discussion through My Mans | 1-16 | 1.1.8.1, 2.4.1.1, 2.4.3.1, 2.4.4.1, 3.2.4.1, 3.2.6.1, 3.2.7.1, 4.3.2.1 |
| 4.3 | Self-learning | 14 | 4.3.2.1 |
| 4.4 | Practical classes | 1-16 | 1.1.8.1, 2.4.1.1, 2.4.3.1, 2.4.4.1, 3.2.4.1, 3.2.6.1, 3.2.7.1, 4.3.2.1 |
| 5.5 | Case study- problem solving | 12 | 1.1.8.1, 2.4.1.1, 2.4.3.1, 2.4.4.1, 3.2.4.1, 3.2.6.1, 3.2.7.1, 4.3.2.1 |
| 5.6 | Collaborative learning: research project | 2-12 | 1.1.8.1, 2.4.1.1, 2.4.3.1, 2.4.4.1, 3.2.4.1, 3.2.6.1, 3.2.7.1, 4.3.2.1 |

5- Student Assessment:

Assessment Methods:

| Assessment Methods | K elements to be assessed |
|---|--|
| 1-Written exam | 1.1.8.1, 2.4.1.1, 2.4.3.1, 2.4.4.1, 3.2.4.1, 3.2.6.1, 3.2.7.1, 4.3.2.1 |
| 2-practical exam applying OSPE | 1.1.8.1, 2.4.1.1, 2.4.3.1, 2.4.4.1, 3.2.4.1, 3.2.6.1, 3.2.7.1, 4.3.2.1 |
| 3-Oral | 1.1.8.1, 2.4.1.1, 2.4.3.1, 2.4.4.1, 3.2.4.1, 3.2.6.1, 3.2.7.1, 4.3.2.1 |
| 4- Periodical (Mid-term exam) / Course work | 1.1.8.1, 2.4.1.1, 2.4.3.1, 2.4.4.1, 3.2.4.1, 3.2.6.1, 3.2.7.1, 4.3.2.1 |

b. Assessment schedule

| Assessment | Method | Schedule |
|--------------|--|-------------------------|
| Assessment 1 | Periodical (Mid-term exam) / Course work | 7th – 9th week |
| Assessment 2 | Practical examination and tutorial | 16 th week |
| Assessment 3 | Written exam | Starting from 17th week |
| Assessment 4 | Oral exam | Starting from 17th week |

c. Weighing of assessments

| | | |
|---|--|-----|
| 1 | Periodical (Mid-term) exam / Course work | 15% |
| 2 | Practical examination and tutorial | 25% |



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|-------|--------------------------------|------|
| 3 | Final-term written examination | 50% |
| 4 | Oral examination | 10% |
| Total | | 100% |

6- Facilities required for teaching and learning

| | |
|-------------------------|---|
| -Class room | Data show- Computers, Internet. |
| - Laboratory facilities | Microscopes- chemicals- glass wares- white board , chemicals & experimental animals |

7- List of References

| No | Reference | Type |
|----|--|--------------------|
| 1. | Electronic book prepared by staff members | Course notes |
| 2. | Recorded videos prepared by staff members | Videos on platform |
| 3. | Atul Kabra et al., 2017: TEXTBOOK OF CLINICAL TOXICOLOGY (PHARMA D) (4TH YEAR) | Book |
| 4. | Prashant Kumar et al, 2020. Pharmacology and Toxicology D. Pharma (Second Year) [Print Replica] Kindle Edition. Thakur Publication Pvt Ltd; 2020th edition | Book |
| 5. | http://www.sciencedirect.com/ http://www.google scholar.com/ http://www.pubmed.com https://www.ekb.eg | websites |



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8- Matrix of course content versus course k. elements:

| Course contents / K. elements | Domain 1 | Domain 2 | | | Domain 3 | | | Domain 4 |
|---|----------|----------|-------|-------|----------|-------|-------|----------|
| | 1.1.8 | 2.4.3 | 2.4.4 | 2.4.5 | 3.2.4 | 3.2.5 | 3.2.7 | 4.3.2 |
| Introduction | ✓ | | | | ✓ | | | |
| Target organ toxicity – Neurotoxicity, Pulmonary toxicity and Cardiac Toxicity | ✓ | ✓ | ✓ | | ✓ | ✓ | | |
| Target organ toxicity — Hepatotoxicity and Nephrotoxicity | ✓ | | | | | | | |
| Heavy Metal toxicity | ✓ | ✓ | ✓ | | ✓ | ✓ | | |
| Natural Toxins: Microbial toxins and Mycotoxins | ✓ | | | | | | | |
| Natural Toxins: Plant, animal and marine toxins | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | |
| Genotoxicity, Mutagenesis, Teratogenesis and Carcinogenesis | ✓ | | | | ✓ | | | ✓ |
| Drugs of Abuse | ✓ | | | | ✓ | | ✓ | ✓ |
| Forensic Toxicology | ✓ | | | | | | | |
| Management of Poisoning | ✓ | ✓ | | | | ✓ | | |
| Environmental toxicology – Food Pollution | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Environmental toxicology –Water, Soil and Air Pollution | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |



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|--|---|---|---|---|---|---|---|---|---|
| Occupational toxicology (part 1) | | | | | | | | | ✓ |
| Occupational toxicology (part 2)(self-learning) | | | | | | | | | ✓ |
| CNS stimulant toxicity | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Toxicity of Organophosphorus insecticides | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Toxic Gases : Cyanide toxicity | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Local Toxicity: Caustics: inorganic acids and alkali | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Toxins affecting Blood: Hemolytic agents | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Analgesics Toxicity: Aspirin and Paracetamol Toxicity | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Alcohol Toxicity: Ethanol, Methanol and Glycols | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Nicotine toxicity | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Sedatives and Hypnotics Toxicity: Barbiturates and Benzodiazepines | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Drug and Poison Information Centers | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Clinical Cases on Management of Toxicity | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Anabolic steroid toxicity | ✓ | ✓ | | ✓ | ✓ | | ✓ | ✓ | |



9- Matrix between course contents, methods of learning and assessment

| A) Theoretical Part: | | | | | | | | | | |
|--|-------------------------------|-----------------|-------------------|--------------------------------|---------------------------|---------------|--------------------|--------------------|---------|------|
| Course Contents | Teaching and Learning Methods | | | | | | Assessment methods | | | |
| | Advanced Lecture | Hybrid learning | Practical session | Case study- problem solving | Collaborative learning | Self-learning | Corse Work | Practical/Tutorial | Written | Oral |
| Introduction | √ | | | | | | √ | | √ | √ |
| Target organ toxicity – Neurotoxicity, Pulmonary toxicity and Cardiac Toxicity | √ | | | | | | √ | | √ | √ |
| Target organ toxicity — Hepatototoxicity and Nephrotoxicity | √ | | | | | | √ | | √ | √ |
| Heavy Metal toxicity | √ | | | | | | √ | | √ | √ |
| Natural Toxins: Microbial toxins and Mycotoxins | √ | | | | | | | | √ | √ |
| Natural Toxins: Plant, animal and marine toxins | √ | √ | | | | | | | √ | √ |



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|---|-------------------------------|-----------------|-------------------|-----------------------------|---|---------------|--------------------|--------------------|---------|------|
| Genotoxicity, Mutagenesis, Teratogenesis and Carcinogenesis | √ | | | | | | | | √ | √ |
| Drugs of Abuse | √ | | | | | | | | √ | √ |
| Forensic Toxicology | √ | | | | | | | | √ | √ |
| Management of Poisoning | √ | | | | | | | | √ | √ |
| Environmental toxicology – Food Pollution | √ | | | | | | | | √ | √ |
| Environmental toxicology – Water, Soil and Air Pollution | √ | | | | | | | | √ | √ |
| Occupational toxicology (part 1) | | √ | | | | √ | | | √ | √ |
| Occupational toxicology (part 2)(self-learning) | | √ | | | | √ | | | √ | √ |
| B) Tutorial Part: | | | | | | | | | | |
| Course Contents | Teaching and Learning Methods | | | | | | Assessment methods | | | |
| | Advanced Lecture | Hybrid learning | Practical session | Case study- problem solving | Conaborative learning: research project | Self-learning | Corse Work | Practical/Tutorial | Written | Oral |
| CNS stimulant toxicity | | √ | √ | | | | | √ | | |



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|--|--|---|---|---|---|--|---|---|--|--|
| Toxicity of Organophosphorus insecticides | | √ | √ | | √ | | √ | √ | | |
| Toxic Gases : Cyanide toxicity | | √ | √ | | √ | | √ | √ | | |
| Local Toxicity: Caustics: inorganic acids and alkali | | √ | √ | | √ | | √ | √ | | |
| Toxins affecting Blood: Hemolytic agents | | √ | √ | | √ | | √ | √ | | |
| Analgesics Toxicity: Aspirin and Paracetamol Toxicity | | √ | √ | | √ | | √ | √ | | |
| Alcohol Toxicity: Ethanol, Methanol and Glycols | | √ | √ | | √ | | √ | √ | | |
| Nicotine toxicity | | √ | √ | | √ | | √ | √ | | |
| Sedatives and Hypnotics Toxicity: Barbiturates and Benzodiazepines | | √ | √ | | √ | | √ | √ | | |
| Drug and Poison Information Centers | | √ | √ | | √ | | √ | √ | | |
| Clinical Cases on Management of Toxicity | | √ | √ | √ | √ | | √ | √ | | |
| Anabolic steroid toxicity | | √ | √ | √ | √ | | √ | √ | | |



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|--------------------|--|
| Course Coordinator | Prof. Dr. Mohammed S. El-Awady |
| Head of Department | Prof Dr Manar A Nader  |

Date:18 /9 / 2023



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بكالوريوس الصيدلة (فارم د - Pharm D)

Course Specification

Academic year: 2023/2024

| | |
|---|-------------------------------------|
| Course name: First Aid | اسم المقرر: الإسعافات الأولية |
| Academic Level: Level 5 | المستوى الأكاديمي: الخامس |
| Scientific department: Pharmacology & Toxicology | القسم العلمي: الأدوية والسموم |
| Head of Department: Prof. Manar Ahmed Nader | رئيس القسم: أ.د/ منار أحمد نادر |
| Course Coordinator: Prof. Nashwa Abu-Elsaad | منسق المقرر: أ.د/ نشوى أبو السعد |



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| | |
|--|---|
| University | Mansoura |
| Faculty | Pharmacy |
| Department offering the course | Pharmacology & Toxicology |
| Department supervising the course | Pharmacology & Toxicology |
| Program on which the course is given | Bachelors in pharmacy -Pharm D |
| Academic Level | Fifth level, Second semester, 2023/2024 |
| Date of course specification approval | 18/9/2023 |

A- Basic Information: Course data:

| | |
|---------------------------------------|---------------------|
| Course Title | First Aid |
| Course Code | PH 529 |
| Prerequisite | - |
| Teaching Hours/ week: Lecture: | 1 |
| Practical: | - |
| Total Credit Hours | 1 (Credit H) |

B- Professional Information:

2- Course Aims:

This course enables the students to:

- Deal with different medical emergencies such as cardiovascular, respiratory, diabetic, neurological, environmental and surgical emergencies.
- Describe basic life support, first aid kit, first aid ABC.
- Apply first aid protocols for fractures and dislocations, bleeding burns, animal bites or stings, and poisoning.



2- Course k. elements:

Upon completing the course, the student will be able to dominate the following key elements:

Domain 1: fundamental knowledge

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 1.1.1 | 1.1.1.1 | Recognize first aid skills and management for a range of common disorders and injuries. |
| 1.1.8 | 1.1.8.1 | Describe emergency procedures and techniques of basic life support for casualties in emergency situations. |

Domain 2: professional and ethical practice

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 2.1.1 | 2.1.1.1 | Illustrate professional requirements for individuals and healthcare team to provide first aid care. |
| 2.4.1 | 2.4.1.1 | Identify and deal with different causes of poisoning and select the first aid measures for various toxic agents. |
| 2.4.2 | 2.4.2.1 | Implement first aid principles to manage medical emergency cases depending on related signs, symptoms, and risk factors. |
| 2.4.6. | 2.4.6.1. | Retrieve and interpret knowledge and ability to use principles of physical assessment and nutritional status needed to save patient's life |

Domain 3: pharmaceutical care

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|---|
| 3.2.2 | 3.2.2.1 | Assess and perform first aid measures and initial therapy for injured and ill casualties. |
| | 3.2.2.2 | Demonstrate how to perform basic first aid technical procedures. |
| 3.2.5 | 3.2.5.1 | Provide education and counseling to patients, healthcare professionals and communities to achieve safe and cost-effective use of medicine |



Domain 4: personal practice

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|---|
| 4.1.1 | 4.1.1.1 | Acquire skills to arrange priorities in case of managing medical emergencies in pharmacy. |
| | 4.1.1.2 | Practice independent learning to promote first aid knowledge and skills. |

3- Course Contents

| Week No. | Topics | Hours |
|-------------------------|--|-------|
| 1 | Introduction to first aid (primary and secondary assessment) | 1 |
| 2 | Management of vital signs and resuscitation | 1 |
| 3 | First aid for bleeding (internal and external) – nosebleeds – embedded objects – amputations | 1 |
| 4 | First aid for heart attack | 1 |
| 5 | First aid for respiratory emergencies | 1 |
| 6 | First aid for seizures, fever and diabetes | 1 |
| 7 | First aid for burns, electrocutions | 1 |
| 8 | First aid for chest, abdomen, head, and eye injuries | 1 |
| 9 | First aid for cold related illness/injuries (frostbites-hypothermia), pressure related injuries (decompression sickness) | 1 |
| 10 | First aid for heat related illness/injuries (heat cramps-heat exhaustion- heat stroke) | 1 |
| 11 | First aid for musculoskeletal injury | 1 |
| 12 | First aid for shock, animal bites and stings | 1 |
| 13 | First aid for poisoning, First aid kits (part 1) | 1 |
| 14 | First aid for poisoning, First aid kits (part 2) (self learning) | 1 |
| 15 | Compensatory and alternative lecture | 1 |
| 16 | Revision and quiz | 1 |
| Starting from 17 | Final Written and Oral Exam | - |

4- Teaching and Learning Methods:

| Teaching and learning Methods | Weeks No. | Key elements to be addressed |
|-------------------------------|-----------|------------------------------|
|-------------------------------|-----------|------------------------------|



| | | | |
|-----|--|-----------------------|--|
| 4.1 | Advanced lecture | 1-16 | 1.1.1.1, 1.1.8.1, 2.1.1.1, 2.4.1.1, 2.4.2.1 |
| 4.2 | Hybrid learning • Online learning through MyMans as recorded video lectures. • Interactive discussion through MyMans | 5, 8, 14 | 1.1.1.1, 1.1.8.1, 2.1.1.1, 2.4.1.1, 2.4.2.1, 2.4.6.1 |
| 4.3 | Collaborative learning: through role playing | 1, 2 5, 6 11,14 | 1.1.1.1, 1.1.8.1, 2.1.1.1, 2.4.1.1, 2.4.2.1, 2.4.6.1 3.2.2.1, 3.2.2.2, 3.2.5.1 4.1.1.1, 4.1.1.2 |
| 4.4 | Self-learning | 14 | 4.1.1.1, 4.1.1.2 |
| 4.5 | Computer aided learning | 5, 8, 14 | 1.1.1.1, 1.1.8.1, 2.1.1.1, 2.4.1.1, 2.4.2.1, 2.4.6.1 3.2.2.1, 3.2.2.2, 3.2.5.1 4.1.1.1, 4.1.1.2 |

5- Student Assessment:

e- Assessment Methods:

| Assessment Methods | Key elements to be assessed |
|---|---|
| 1- Periodical (Mid-term exam / Course work) | 1.1.1.1, 1.1.8.1, 2.1.1.1, 2.4.1.1, 2.4.2.1, 2.4.6.1 3.2.2.1, 3.2.2.2, 3.2.5.1 |
| 2- Written exam | 1.1.1.1, 1.1.8.1, 2.1.1.1, 2.4.1.1, 2.4.2.1, 2.4.6.1 3.2.2.1, 3.2.2.2, 3.2.5.1 |
| 3- Oral exam | 1.1.1.1, 1.1.8.1, 2.1.1.1, 2.4.1.1, 2.4.2.1, 2.4.6.1 3.2.2.1, 3.2.2.2, 3.2.5.1 4.1.1.1, 4.1.1.2 |

f- Assessment schedule:

| | | |
|--------------|------------------------------------|--------------------------------------|
| Assessment 1 | Periodical (Mid-term/ Course work) | 7-9 th week |
| Assessment 3 | Written exam | Start from the 17 th week |
| Assessment 4 | Oral exam | Start from the 17 th week |

g- Weighing of assessment:

| | | |
|---|------------------------------------|-----|
| 1 | Periodical (Mid-term/ Course work) | 15% |
| 2 | Written exam | 75% |
| 3 | Oral exam | 10% |



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| | |
|--------------|------|
| Total | 100% |
|--------------|------|

6- Facilities required for teaching and learning:

| | |
|------------------|---|
| Classroom | Data show- Computers, sound system-Internet, Platform |
| Library | Books |

7- List of References

| No | Reference | Type |
|----|--|----------|
| 1. | Furst, J. (2018). The Complete First Aid Pocket Guide: Step-by-Step Treatment for All of Your Medical Emergencies Including • Heart Attack • Stroke • Food Poisoning • Choking • Head Injuries • Shock • Anaphylaxis • Minor Wounds • Burns. United States: Adams Media. | Book |
| 2. | Basic Life Support Provider Manual (International English). N.p.: American Heart Association, Incorporated, 2020. | Book |
| 3. | First Aid Manual 11th Edition: Written and Authorized by the UK's Leading First Aid Providers. (2021). United Kingdom: Dorling Kindersley Limited. | Book |
| 4. | Le, Tao. First Aid for the USMLE Step 1 2022, 32E. United Kingdom: McGraw-Hill Education, 2022. | Book |
| 5. | ACCP guidelines (https://www.accp.com/) Egyptian Knowledge Bank (https://www.ekb.eg/) | websites |



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8-Matrix:

Matrix 1. Course contents and course key elements

A) Theoretical part:

| Course contents | Course Key elements | | | | | | | | | | |
|--|---------------------|---------|-----------|---------|---------|---------|-----------|---------|---------|-----------|---------|
| | Domain: 1 | | Domain: 2 | | | | Domain: 3 | | | Domain: 4 | |
| | 1.1.1.1 | 1.1.8.1 | 2.1.1.1 | 2.4.1.1 | 2.4.2.1 | 2.4.6.1 | 3.2.2.1 | 3.2.2.2 | 3.2.5.1 | 4.1.1.1 | 4.1.1.2 |
| Introduction to first aid (primary and secondary assessment) | - | ✓ | ✓ | - | - | - | - | ✓ | - | - | - |
| Management of vital signs and resuscitation | - | ✓ | - | - | ✓ | ✓ | ✓ | ✓ | - | - | - |
| First aid for bleeding (internal and external) – nosebleeds – embedded objects - amputations | ✓ | ✓ | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| First aid for heart attack | ✓ | ✓ | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| First aid for respiratory emergencies | ✓ | ✓ | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| First aid for seizures, fever and diabetes | ✓ | ✓ | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| First aid for burns, electrocutions | ✓ | ✓ | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| First aid for chest, abdomen, head, and eye injuries | ✓ | ✓ | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| First aid for cold related illness/injuries (frostbites-hypothermia), pressure related injuries (decompression sickness) | ✓ | ✓ | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| First aid for heat related illness/injuries (heat cramps-heat exhaustion- heat stroke) | ✓ | ✓ | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |



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| | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|
| First aid for musculoskeletal injury | ✓ | ✓ | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| First aid for shock, animal bites and stings | ✓ | ✓ | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| First aid for poisoning, First aid kits (part 1) | - | ✓ | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| First aid for poisoning, First aid kits (part 2) (self learning) | - | ? | - | ? | ? | ? | ? | ? | ? | ? | ? |

Matrix 2. Between course contents, methods of learning, and assessment

| Course Contents | Teaching and Learning methods | | | | | Assessment methods | | |
|--|-------------------------------|-----------------|------------------------|---------------|-------------------------|--------------------|---------|------|
| | Advanced Lecture | Hybrid learning | Collaborative learning | Self-learning | Computer aided learning | Course Work | Written | Oral |
| Introduction to first aid (primary and secondary assessment) | ✓ | - | ✓ | - | - | ✓ | ✓ | ✓ |
| Management of vital signs and resuscitation | ✓ | - | ✓ | - | - | ✓ | ✓ | ✓ |
| First aid for bleeding (internal and external) – nosebleeds – embedded objects - amputations | ✓ | - | - | - | - | ✓ | ✓ | ✓ |
| First aid for heart attack | ✓ | - | - | - | - | ✓ | ✓ | ✓ |
| First aid for respiratory emergencies | ✓ | ✓ | ✓ | - | ✓ | - | ✓ | ✓ |
| First aid for seizures, fever and diabetes | ✓ | - | ✓ | - | - | - | ✓ | ✓ |



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| | | | | | | | | |
|--|---|---|---|---|---|---|---|---|
| First aid for burns, electrocutions | ✓ | - | - | - | - | - | ✓ | ✓ |
| First aid for chest, abdomen, head, and eye injuries | ✓ | ✓ | - | - | ✓ | - | ✓ | ✓ |
| First aid for cold related illness/injuries (frostbites-hypothermia), pressure related injuries (decompression sickness) | ✓ | - | - | - | - | - | ✓ | ✓ |
| First aid for heat related illness/injuries (heat cramps-heat exhaustion- heat stroke) | ✓ | - | - | - | - | - | ✓ | ✓ |
| First aid for musculoskeletal injury | ✓ | - | ✓ | - | - | - | ✓ | ✓ |
| First aid for shock, animal bites and stings | ✓ | - | ✓ | - | - | - | ✓ | ✓ |
| First aid for poisoning, First aid kits (part 1) | - | ✓ | - | ✓ | ✓ | - | ✓ | ✓ |
| First aid for poisoning, First aid kits (part 2) (self learning) | - | | - | | | - | | |



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| | |
|---------------------------|--------------------------------|
| Course Coordinator | Prof. Nashwa Abu-Elsaad |
| Head of Department | Prof. Manar Ahmed Nader |

Approval Date: 18/9/2023



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بكالوريوس الصيدلة (فارم د – Pharm D)

Course Specification

Academic year: 2023/2024

| | |
|--|---|
| Course name: Research Methodology | اسم المقرر: طرق البحث |
| Course Code: NP 524 | كود المقرر: NP 524 |
| Academic Level: Fifth level | المستوى الأكاديمي: الخامس |
| Scientific department: Medicinal Chemistry | القسم العلمي : الكيمياء الدوائية |
| Head of Department: Prof. Dr. Mohamed Ahmed A. Moustafa | رئيس القسم : ا.د/ محمد احمد احمد مصطفى |
| Course Coordinator: Dr. Ahmed abobakr salem | منسق المقرر : د/ أحمد أبوبكر سالم. |



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| | |
|---------------------------------------|--|
| University | Mansoura |
| Faculty | Pharmacy |
| Department offering the course | Medicinal Chemistry |
| Department supervising the course | Medicinal Chemistry |
| Program on which the course is given | Bachelor in Pharmacy-Pharm D |
| Academic Level | Level five, second semester, 2023/2024 |
| Date of course specification approval | 6/9/2023 |

A. Basic information: course data:

| | |
|--------------------------------|----------------------|
| Course Title | Research Methodology |
| Course Code | NP 524 |
| Prerequisite | Registration |
| Teaching credit Hours: Lecture | 1 |
| : Practical | 0 |
| Total Credit Hours | 1 |

B. Professional Information:

1. Course Aims:

1. Introducing students to the fundamental concepts, principles, terms, theories, and applications of research methods.
2. Studying both the quantitative and qualitative approaches.
3. Covering the sources of knowledge, the scientific method in research, and the ethics of research.
4. Covering the important steps in planning a research project, sampling techniques and measurement tools necessary for conducting a research project.
5. Discussing the considerations involved in writing a research report.



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2- Course k. elements:

Upon completing the course, the student will be able to dominate the following key elements

Domain 1: Fundamental Knowledge

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 1.1.1 | 1.1.1.1 | Define research and its fundamental concepts and explain components of a research proposal. |
| 1.1.6 | 1.1.6.1 | Select a research design that is appropriate to a research topic. |
| | 1.1.6.2 | Distinguish between a variety of research methods and designs: Quantitative, Qualitative, Mixed. |

Domain 2: Professional and Ethical Practice

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|---|
| 2.1.1 | 2.1.1.1 | Understand the importance of research ethics. |
| 2.1.2 | 2.1.2.1 | Comply with the limitations of research ethics (plagiarism, acknowledging and giving credit where credit is due, using data for research purposes only, etc.) |
| 2.5.3 | 2.5.3.1 | Read and critically review the literature of a particular research topic and discuss primary characteristics of data analysis. |
| | 2.5.3.2 | Discuss the findings with reference to the research objectives, questions/hypotheses and the relevant literature. |

Domain 4: Personal Practice:

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 4.1.2 | 4.1.2.1 | Demonstrate ability to work independently and/or in collaborative research efforts. |
| 4.2.1 | 4.2.1.1 | Present actual data obtained that could be bases of future personal research or by others. |
| 4.3.2 | 4.3.2.1 | Foster continuous professional development and life-long learning. |

3- Course Contents:

| Week No. | Topics | Lecture credit Hours |
|----------|--|----------------------|
| 1 | Introduction Why we do research? Safety in research environment. | 1 |
| 2 | Research: Fundamental Concepts (Definition, terms, philosophy, aims, objectives, difference between research subject and research topic, research ethics, etc.). | 1 |



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| | | |
|-------------------------|---|-------------------------------|
| 3 | Starting a Research Project: Studying problem (stating the problem), formulating research questions/ hypotheses, etc. | 1 |
| 4 | The Literature and Theoretical Framework (central ideas of how to read and review the relevant literature). | 1 |
| 5 | How to quote and cite sources correctly and validly. | 1 |
| 6 | Data: description and collection methods. Differences between Quantitative, Qualitative and Mixed Methods. | 1 |
| 7 | A research proposal should be prepared at this level and elaborated as the course proceeds. | 1 |
| 8 | Methods of data collection: General Introduction Retrospective and prospective studies. | 1 |
| 9 | Questionnaires, Interviews, Observation, Focus Group Discussions, etc. (practice doing one of these methods). | 1 |
| 10 | Data Analysis: Key Ideas and Methods (part one). | 1 |
| 11 | Data Analysis: Key Ideas and Methods (part two). | 1 |
| 12 | Data Analysis: Key Ideas and Methods (part three). | 1 |
| 13 | Results and Discussion: How to present and discuss findings, Summary, Conclusion and Recommendations/Implications. (Endnote for self-learning). | 1 |
| 14 | Attend defense of Thesis in different scientific domains and online webinars and group discussions. (Self- learning) | 1 |
| 15 | Compensatory and alternative lecture | 1 |
| 16 | Revision and quiz | 1 |
| Starting from 17 | Final Written and Oral Exam | -- |
| Week No. | Practical topics | Practical credit hours |
| | NA | -- |

4- Teaching and learning Methods:

| No. | Teaching and learning Methods | Week No. | K. elements to be addressed |
|-----|---|----------|--|
| 4.1 | Computer aided learning: a. Lectures using Data show, power Point presentations b. Distance learning • Online learning | 1-16 | 1.1.1.1, 1.1.6.1, 1.1.6.2, 2.1.1.1, 2.5.3.2, 4.1.2.1 |



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| | | | |
|-----|---|------|--|
| | through my mans "Mansoura university "as recorded – video lectures • Inter active discussion through My Mans | | |
| 4.2 | Self-learning | 14 | 2.5.3.1, 2.5.3.2, 4.1.2.1, 4.3.2.1 |
| 4.3 | Tutorials | 1-16 | 1.1.1.1, 1.1.6.1, 1.1.6.2, 2.1.1.1, 2.5.3.2, 4.1.2.1 |
| 4.4 | Class Activity: Group discussion offline and online. | 1-12 | 1.1.1.1, 1.1.6.1, 1.1.6.2, 2.1.1.1, 2.5.3.2, 4.1.2.1 |
| 4.5 | Research assignments | 14 | 2.5.3.1, 2.5.3.2, 4.1.2.1, 4.3.2.1 |

5- Student Assessment:

Assessment Methods:

| Assessment Methods | K elements to be assessed |
|-------------------------------|---|
| 1- Written exam | 1.1.1.1, 1.1.6.1, 1.1.6.2, 2.1.1.1, 2.1.2.1, 2.5.3.1, 2.5.3.2, 4.1.2.1, 4.2.1.1, 4.3.2.1 |
| 2- Periodical (Mid-term exam) | 1.1.1.1, 1.1.6.1, 1.1.6.2, 2.1.1.1, 2.1.2.1, 2.5.3.1, 2.5.3.2, 4.1.2.1, 4.2.1.1, 4.3.2.1 |

Assessment schedule

| | | |
|--------------|--|--|
| Assessment 1 | Periodical (Mid-term exam) / Course work | 7-9 th week |
| Assessment 3 | Written exam | Starting from 17 th week |

Weighing of assessments

| | | |
|-------|--|------|
| 1 | Periodical (Mid-term) exam / Course work | 25% |
| 3 | Final-term written examination | 75% |
| Total | | 100% |

Facilities required for teaching and learning

| | |
|-------------|------------------------------------|
| -Class room | Data show, Computers and Internet. |
|-------------|------------------------------------|



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7- List of References

| No | Reference | Type |
|-----|--|----------|
| (1) | Creswell JW. Research Design: Qualitative, Quantitative and Mixed Methods Approaches, 4 th ed. | Book |
| (2) | Bell J. Doing Your Research Project (Open Up Study Skills), 5 th ed; 2013 Jan 1. | Book |
| (3) | Marczyk GR, DeMatteo D, Festinger D. Essentials of research design and methodology. John Wiley & Sons; 2013. | Book |
| (6) | http://www.sciencedirect.com/ http://www.google scholar.com/ http://www.pubmed.com https://www.ekb.eg | websites |



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8- Matrix of course content versus course k. elements:

| Course contents | Course Key Elements | | | | | | | | | |
|--|---------------------|---------|---------|----------|---------|---------|---------|----------|---------|---------|
| | Domain 1 | | | Domain 2 | | | | Domain 4 | | |
| | 1.1.1.1 | 1.1.6.1 | 1.1.6.2 | 2.1.1.1 | 2.1.2.1 | 2.5.3.1 | 2.5.3.2 | 4.1.2.1 | 4.2.1.1 | 4.3.2.1 |
| Introduction Why we do research? Safety in research environment. | ✓ | ✓ | ✓ | | | | | | | |
| Research: Fundamental Concepts | | ✓ | ✓ | ✓ | ✓ | | | | | |
| Starting a Research Project: Studying problem (stating the problem), formulating research questions/ hypotheses, etc. | | ✓ | | | | ✓ | | | | |
| The Literature and Theoretical Framework (central ideas of how to read and review the relevant literature). | | | | | | ✓ | ✓ | | | |
| How to quote and cite sources correctly and validly. | | | | | | ✓ | ✓ | | | |
| Data: description and collection methods. Differences between Quantitative, Qualitative and Mixed Methods | | | | ✓ | ✓ | | | ✓ | | |
| A research proposal should be prepared at this level and elaborated as the course proceeds. | | | | | ✓ | ✓ | | | | |
| Methods of data collection: General Introduction Retrospective and prospective studies. | | | | | | ✓ | | ✓ | | |



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| | | | | | | | | | | |
|---|--|--|--|--|---|---|---|---|---|---|
| Questionnaires, Interviews, Observation, Focus Group Discussions, etc. (practice doing one of these methods). | | | | | | | ✓ | | | ✓ |
| Data Analysis: Key Ideas and Methods (part one). | | | | | ✓ | ✓ | ✓ | ✓ | | |
| Data Analysis: Key Ideas and Methods (part two). | | | | | ✓ | ✓ | ✓ | ✓ | | |
| Data Analysis: Key Ideas and Methods (part three). | | | | | ✓ | ✓ | ✓ | ✓ | | |
| Results and Discussion: How to present and discuss findings Summary, Conclusion and Recommendations/Implications. (Endnote for self-learning). | | | | | | ✓ | ✓ | ✓ | | ✓ |
| Attend defense of Thesis in different scientific domains and online webinars and group discussions. (self-learning) | | | | | | | | | ✓ | ✓ |



9- Matrix 2. between course contents, methods of learning and assessment

| Course Contents | Teaching and Learning Methods | | | | | Assessment methods | |
|---|-------------------------------|----------------------|------------------|-----------|---------------|--|---------|
| | Lecture | Research Assignments | Group Discussion | Tutorials | Self-learning | Periodical (Mid-term) exam / Course work | Written |
| Introduction Why we do research? Safety in research environment. | √ | | | √ | | √ | √ |
| Research: Fundamental Concepts | √ | | | √ | | √ | √ |
| Starting a Research Project: Studying problem (stating the problem), formulating research questions/ hypotheses, etc. | √ | | √ | √ | | √ | √ |
| The Literature and Theoretical Framework (central ideas of how to read and review the relevant literature). | √ | | | √ | | √ | √ |
| How to quote and cite sources correctly and validly. | √ | | | √ | | | √ |
| Data: description and collection methods. Differences between Quantitative, Qualitative and Mixed Methods | √ | | | √ | | | √ |
| A research proposal should be prepared at this level and elaborated as the course proceeds. | √ | | | √ | | | √ |
| Methods of data collection: General Introduction Retrospective and prospective studies. | √ | | | √ | | | √ |
| Questionnaires, Interviews, Observation, Focus Group | √ | | √ | √ | | | √ |
| Data Analysis: Key Ideas and Methods (part one). | √ | | | √ | | | √ |
| Data Analysis: Key Ideas and Methods (part two). | √ | | | √ | | | √ |



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|---|---|---|---|---|---|--|---|
| Data Analysis: Key Ideas and Methods (part three). | √ | | | √ | | | √ |
| Results and Discussion: How to present and discuss findings Summary, Conclusion and Recommendations/Implications. (Endnote for self-learning). | √ | | √ | √ | √ | | √ |
| Attend defense of Thesis in different scientific domains and online webinars and group discussions. (self-learning) | | √ | √ | √ | √ | | √ |

| | |
|---------------------------|--|
| Course Coordinator | Dr. Ahmed Abobakr salem |
| | |
| Head of Department | Prof. Dr. Mohamed Ahmed A. Moustafa |
| | |

Date: 6 /9/ 2023



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بكالوريوس الصيدلة (فارم دي – (Pharm D))

Course Specification

Academic year: 2023/2024

| | |
|--|--|
| Course name: Advanced Drug Delivery Systems | اسم المقرر: أنظمة توصيل دواء متقدمة |
| Academic Level: Level 5 | المستوى الأكاديمي : الخامس |
| Scientific department: Pharmaceutics | القسم العلمي : الصيدلانيات |
| Head of Department: Prof. Dr. Irhan Ibrahim Abu Hashim | رئيس القسم : ا.د/ أرهان ابراهيم ابو هاشم |
| Course Coordinator: Prof. Dr. Marwa Salah El-Din El-Dahhan | منسق المقرر : ا.د/ مروة صلاح الدين الدهان |



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| | |
|---------------------------------------|-------------------------------------|
| University | Mansoura |
| Faculty | Pharmacy |
| Department offering the course | Pharmaceutics |
| Department supervising the course | Pharmaceutics |
| Program on which the course is given | B. Pharm. (Pharm D) |
| Academic Level | Level 5, Second semester, 2023/2024 |
| Date of course specification approval | September 2023 |

A. Basic Information: Course data:

| | |
|--------------------------------|--------------------------------|
| Course Title | Advanced Drug Delivery Systems |
| Course Code | PT 5211 |
| Prerequisite | ----- |
| Teaching credit Hours: Lecture | 1 |
| : Practical | 1 |
| Total Credit Hours | 2 |

B. Professional Information:

1. Course Aims:

This course enables the students to:

- Gain comprehensive knowledge of the principles of pharmaceutical pre-formulation as a gateway to dosage forms design and formulation.
- Explain formulations based on the physical and chemical properties of the drug substance and the intended use of the drug product.
- Illustrate the formulation principles and applications of novel and targeted drug delivery systems by transforming proteins, genes, and other biotechnology driven compounds into therapeutic products.
- Know the formulation aspects of biotechnology derived pharmaceuticals.
- Explain the application of polymers and excipients to solve problems/issues concerning the optimization of absorption, selective transport, and targeting.



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- Course k. elements:

Upon completing the course, the student will be able to dominate the following key elements

Domain 1- fundamental knowledge

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|---|
| 1.1.1 | 1.1.1.1 | Define the principles of pre-formulation. |
| | 1.1.1.2 | Explain the basis for the development of strategies to deliver therapeutic agents to specific target sites at rates appropriate for the optimization of therapeutics effect. |
| 1.1.3 | 1.1.3.1 | Define the types, characteristics, and formulation methods of the advanced drug delivery systems using different polymers. |
| | 1.1.3.2 | Classify different techniques for the preparation of different advanced drug delivery systems and their relevant basic principles, advantages, and disadvantages of each technique. |

Domain 2: professional and ethical practice

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 2.2.4 | 2.2.4.1 | Use different techniques needed for the development, formulation, and evaluation of advanced drug delivery systems using different polymers. |
| | 2.2.4.2 | Classify the modern systems in the development of new trends to deliver drug molecules to specific target sites. |

Domain 4: personal practice:

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|---|
| 4.1.2 | 4.1.2.1 | Retrieve and evaluate the information and work effectively in a team. |
| 4.3.2 | 4.3.2.1 | Practice independent learning to promote continuous professional development. |



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3- Course Contents:

| Week No. | Topics | Lecture credit Hours |
|----------|---|------------------------|
| 1 | Introduction of pre-formulation. | 1 |
| 2 | Physical and chemical properties of the drugs and their effects on pre-formulation. | 1 |
| 3 | Solubility and stability of the drugs and their effects on pre-formulation. | 1 |
| 4 | Targeted drug delivery (definition, requirements). | 1 |
| 5 | Targeted drug delivery (general concepts, mechanisms). | 1 |
| 6 | Nanocarriers (functionalization, drug loading). | 1 |
| 7 | Nanocarriers (targeting, methods of preparation). | 1 |
| 8 | Nano-sized drug delivery systems (definition, advantages). | 1 |
| 9 | Nano-sized drug delivery systems (types). (Self-learning topic: liposomes, solid lipid nanoparticles). | 1 |
| 10 | Polymers (natural polymers) | 1 |
| 11 | Polymers (semi-synthetic polymers) | 1 |
| 12 | Polymers (synthetic polymers) | 1 |
| 13 | Introduction of the gene therapy. | 1 |
| 14 | Biotechnology products. | 1 |
| 15 | Compensatory and alternative lecture | 1 |
| 16 | Revision and quiz | 1 |
| 17 | Final Written And Oral Exam | - |
| Week No. | Practical topics | Practical credit hours |
| 1 | Pre-formulation (Physical and chemical properties of the drugs). | 1 |
| 2 | Pre-formulation (Solubility) | 1 |



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| | | |
|----|---|---|
| 3 | Techniques for nanoparticles preparation (polymeric nanoparticles) | 1 |
| 4 | Techniques for nanoparticles preparation (polymeric micelles) | 1 |
| 5 | Techniques for nanoparticles preparation (liposomes) | 1 |
| 6 | Techniques for nanoparticles preparation (solid lipid nanoparticles) | 1 |
| 7 | Application of nanoparticles in protein therapy. | 1 |
| 8 | Midterm exam | - |
| 9 | Application of nanoparticles in gene therapy. | 1 |
| 10 | Application of nanoparticles in biotechnology derived pharmaceuticals. | 1 |
| 11 | Application of nanoparticles using targeted polymers (colon targeting). | 1 |
| 12 | Application of nanoparticles using targeted polymers (cancer cells). | 1 |
| 13 | Stability of the drugs part 1 | 1 |
| 14 | Stability of the drugs part 2 | 1 |
| 15 | Revision and activity | 1 |
| 16 | Practical Exam | 1 |

4- Teaching and Learning Methods:

| No | Teaching and learning Methods | Weeks | K. elements to be addressed |
|-----|---|-------|--|
| 4.1 | <p>Computer aided learning:</p> <p>a. Lectures using Data show, power Point presentations</p> <p>b. Hybrid learning</p> <ul style="list-style-type: none"> ● Online learning through my mans "Mansoura university" as recorded video lectures ● Online learning through my mans "Mansoura university" as recorded video of practical session <p>Interactive discussion through My Mans.</p> | 1-16 | <p>1.1.1.1, 1.1.1.2, 1.1.3.1, 1.1.3.2, 2.2.4.1, 2.2.4.2,</p> |



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| | | | |
|-----|---|-----------|--|
| 4.2 | Advanced lecture (Group discussion) | 1-16 | 1.1.1.1, 1.1.1.2, 1.1.3.1, 1.1.3.2, 2.2.4.1, 2.2.4.2, 4.1.2.1 |
| 4.3 | Practical works and tutorials | 1-16 | 1.1.1.1, 1.1.1.2, 1.1.3.1, 1.1.3.2, 2.2.4.1, 2.2.4.2, 4.1.2.1 |
| 4.4 | Self-learning | 9 | 4.1.2.1, 4.3.2.1 |
| 4.5 | Collaborative learning: Research Project | 9, 10, 11 | 1.1.3.1, 1.1.3.2, 4.1.2.1 |

5- Student Assessment:

a- Assessment Methods:

| | |
|--|---|
| 1-Periodical (Mid-term exam) / Course work | 1.1.1.1/ 1.1.1.2 / 2.2.4.2 |
| 2-Practical exam using OSPE | 1.1.1.1 / 1.1.1.2 / 1.1.3.1 / 1.1.3.2 / 2.2.4.1 / 2.2.4.2 |
| 3-Written exam | 1.1.1.1 / 1.1.1.2 / 1.1.3.1 / 1.1.3.2 / 2.2.4.1 / 2.2.4.2 |
| 4-Oral | 1.1.1.1 / 1.1.1.2 / 1.1.3.1 / 1.1.3.2 / 2.2.4.1 / 2.2.4.2 / 4.1.2.1 /4.3.2.1 |

b. Assessment schedule

| | | |
|------------------|--|----------------------------------|
| Assessment 1 | Periodical (Mid-term exam)/Course work | 7-9 th week |
| Assessment 2 | Practical applying OSPE | 16 th week |
| Assessment 3 | Written | Start from 17 th week |
| Assessment 4 | Oral | Start from 17 th week |
| Other assessment | | |

c. Weighing of assessments

| | | |
|-------|--|------|
| 1 | Periodical (Mid-term exam)/Course work | 15% |
| 2 | Practical examination & tutorial | 25% |
| 3 | Final-term examination | 50% |
| 4 | Oral examination | 10% |
| Total | | 100% |

6- Facilities required for teaching and learning

| | |
|-----------------------|---|
| Classroom | Data show- Computers, sound system-Internet, Platform |
| Laboratory facilities | Data show, computers, white board |
| Library | Books and Pharmacopoeia |

7- List of References



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| No | Reference | Type |
|----|---|----------------------|
| 1. | Electronic book “Advanced Drug Delivery Systems” prepared by staff members. | eBook |
| 2. | Mitra A, Lee CH, Cheng K. Advanced Drug Delivery. Wiley; 2013 | Essential textbook |
| 3. | Mozafari M. Nanoengineered Biomaterials for Advanced Drug Delivery. Elsevier; 2020. | Recommended textbook |
| 4. | Dua K, Mehta M, Pinto T de JA, Pont LG, Williams KA, Rathbone M. Advanced Drug Delivery Systems in the Management of Cancer. Elsevier; 2021. | Recommended textbook |
| 5. | http://www.sciencedirect.com / http://www.google.com / http://www.pubmed.com / https://www.ekb.eg | Websites |



8- Matrix of knowledge and skills of the course

| A) Theoretical part: | | | | | | | | |
|---|----------|---------|---------|---------|----------|---------|----------|---------|
| Course contents / K. elements | Domain 1 | | | | Domain 2 | | Domain 4 | |
| | 1.1.1.1 | 1.1.1.2 | 1.1.3.1 | 1.1.3.2 | 2.2.4.1 | 2.2.4.2 | 4.1.2.1 | 4.3.2.1 |
| Introduction of pre-formulation. | ✓ | | | | ✓ | | | |
| Physical and chemical properties of the drugs and their effects on pre-formulation. | ✓ | | | | ✓ | | | |
| Solubility and stability of the drugs and their effects on pre-formulation. | ✓ | | | | ✓ | | | |
| Targeted drug delivery (definition, requirements). | | ✓ | | | | ✓ | | |
| Targeted drug delivery (general concepts, mechanisms). | | ✓ | | | | ✓ | | |
| Nanocarriers (functionalization, drug loading). | | | ✓ | ✓ | ✓ | | | |
| Nanocarriers (targeting, methods of preparation). | | ✓ | ✓ | ✓ | ✓ | | | |
| Nano-sized drug delivery systems (definition, advantages). | | | ✓ | ✓ | ✓ | | | |
| Nano-sized drug delivery systems (types). (self-learning topic: liposomes, solid lipid nanoparticles). | | | ✓ | ✓ | ✓ | | ✓ | ✓ |
| Polymers (natural polymers) | | | ✓ | ✓ | ✓ | | ✓ | |
| Polymers (semi-synthetic polymers) | | | ✓ | ✓ | ✓ | | ✓ | |
| Polymers (synthetic polymers) | | | ✓ | ✓ | ✓ | | ✓ | |
| Introduction to gene therapy. | | ✓ | | | | ✓ | | |



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| | | | | | | | | | |
|--------------------------|--|---|--|--|--|--|---|--|--|
| Biotechnology products. | | ✓ | | | | | ✓ | | |
| B)Practical part: | | | | | | | | | |



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| Course contents / K. elements | Domain 1 | | | | Domain 2 | | Domain 4 | |
|---|----------|---------|---------|---------|----------|---------|----------|---------|
| | 1.1.1.1 | 1.1.1.2 | 1.1.3.1 | 1.1.3.2 | 2.2.4.1 | 2.2.4.2 | 4.1.2.1 | 4.3.2.1 |
| Pre-formulation (Physical and chemical properties of the drugs). | ✓ | | | | ✓ | | | |
| Pre-formulation (Solubility) | ✓ | | | | ✓ | | | |
| Techniques for nanoparticles preparation (polymeric nanoparticles) | | | ✓ | ✓ | ✓ | | | |
| Techniques for nanoparticles preparation (polymeric micelles) | | | ✓ | ✓ | ✓ | | | |
| Techniques for nanoparticles preparation (liposomes) | | | ✓ | ✓ | ✓ | | ✓ | |
| Techniques for nanoparticles preparation (solid lipid nanoparticles) | | | ✓ | ✓ | ✓ | | | |
| Application of nanoparticles in protein therapy. | | ✓ | | | | ✓ | | |
| Application of nanoparticles in gene therapy. | | ✓ | | | | ✓ | | |
| Application of nanoparticles in biotechnology derived pharmaceuticals. | | ✓ | | | | ✓ | | |
| Application of nanoparticles using targeted polymers (colon targeting). | | ✓ | | | | ✓ | ✓ | |
| Application of nanoparticles using targeted polymers (cancer cells). | | ✓ | | | | ✓ | ✓ | |
| Stability of the drugs | ✓ | | | | ✓ | | | |



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**- Matrix between course contents and methods of learning and assessment
A) Theoretical part:**

| Course Content | Teaching and learning methods | | | | Assessment methods | | |
|--|-------------------------------|-----------------|---------------|-------------------------|-------------------------|---------|------|
| | Advanced lecture | Hybrid Learning | Self-learning | Collaborative learning: | Periodical/Co-urse work | Written | Oral |
| Introduction of pre-formulation. | √ | √ | | | √ | √ | √ |
| Physical and chemical properties of the drugs and their effects on pre-formulation. | √ | √ | | | √ | √ | √ |
| Solubility and stability of the drugs and their effects on pre-formulation. | √ | √ | | | √ | √ | √ |
| Targeted drug delivery (definition, requirements). | √ | √ | | | √ | √ | √ |
| Targeted drug delivery (general concepts, mechanisms). | √ | √ | | | | √ | √ |
| Nanocarriers (functionalization, drug loading). | √ | √ | | | | √ | √ |
| Nanocarriers (targeting, methods of preparation). | | √ | | | | √ | √ |
| Nano-sized drug delivery systems (definition, advantages). | √ | √ | | | | √ | √ |
| Nano-sized drug delivery systems (types). (Self-learning topic: liposomes, solid lipid nanoparticles). | √ | √ | √ | √ | | √ | √ |
| Polymers (natural polymers) | √ | √ | | √ | | √ | √ |
| Polymers (semi-synthetic polymers) | √ | √ | | √ | | √ | √ |
| Polymers (synthetic polymers) | √ | √ | | | | √ | √ |
| Introduction to gene therapy. | √ | √ | | | | √ | √ |



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| Course Content | Teaching and learning methods | | | | Assessment methods | | |
|-------------------------|-------------------------------|-----------------|---------------|-------------------------|-------------------------|---------|------|
| | Advanced lecture | Hybrid Learning | Self-learning | Collaborative learning: | Periodical/ Course work | Written | Oral |
| Biotechnology products. | √ | √ | | | | √ | √ |

B) Practical part:

| Course Content | Teaching and learning methods | | Assessment methods | |
|---|-------------------------------|-------------------------------|-------------------------|----------------------|
| | Hybrid Learning | Practical works and tutorials | Periodical/ Course work | Practical/ tutorials |
| Pre-formulation (Physical and chemical properties of the drugs). | √ | √ | √ | √ |
| Pre-formulation (Solubility) | √ | √ | √ | √ |
| Techniques for nanoparticles preparation (polymeric nanoparticles) | √ | √ | √ | √ |
| Techniques for nanoparticles preparation (polymeric micelles) | √ | √ | √ | √ |
| Techniques for nanoparticles preparation (liposomes) | √ | √ | | √ |
| Techniques for nanoparticles preparation (solid lipid nanoparticles) | √ | √ | | √ |
| Application of nanoparticles in protein therapy. | √ | √ | | √ |
| Application of nanoparticles in gene therapy. | √ | √ | | √ |
| Application of nanoparticles in biotechnology derived pharmaceuticals. | √ | √ | | √ |
| Application of nanoparticles using targeted polymers (colon targeting). | √ | √ | | √ |
| Application of nanoparticles using targeted polymers (cancer cells). | √ | √ | | √ |
| Stability of the drugs | √ | √ | | √ |



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| | |
|---------------------------|---|
| Course Coordinator | Prof. Dr. Marwa Salah El-Din El-Dahhan |
| | <i>Marwa Salah</i> |
| Head of Department | Prof. Dr. Irhan Ibrahim Abu Hashim |
| | <i>Irhan Abulhashim</i> |

Approval Date: 20 September 2023



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بكالوريوس الصيدلة فارم د – (Pharm D)

Course Specification

Academic year: 2023/2024

| | |
|---|--|
| Course name: Clinical pharmacy 2 and pharmacotherapeutics | اسم المقرر: صيدلية إكلينيكية 2 والعلاج الدوائي |
| Academic Level: 5 | المستوى الأكاديمي: الخامس |
| Scientific department: Clinical Pharmacy and Pharmacy Practice | القسم العلمي: الصيدلة الإكلينيكية والممارسة الصيدلانية |
| Head of Department: Prof. Mohammed El-Houseiny Shams | رئيس القسم: أ.د/ محمد الحسيني شمس |
| Course Coordinator: Dr. Mona Mohammed Eltamalawy | منسق المقرر: د.منى محمد فتحي الطملاوي |



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| | |
|---------------------------------------|---|
| University | Mansoura |
| Faculty | Pharmacy |
| Department offering the course | Clinical Pharmacy and Pharmacy Practice |
| Department supervising the course | Clinical Pharmacy and Pharmacy Practice |
| Program on which the course is given | Bachelor in Pharmacy-Pharm D by law |
| Academic Level | Fifth level, second semester, 2023-2024 |
| Date of course specification approval | 9 th September 2023 |

A. Basic Information: Course data:

| | |
|---------------------------------|---|
| Course Title | Clinical pharmacy 2 and pharmacotherapy |
| Course Code | PP 529 |
| Prerequisite | Pharmacology 2 |
| Teaching Hours: Lecture | 1 |
| Teaching Credit Hours: Tutorial | 1 |
| Total Credit Hours | 2 (Credit H) |

B. Professional Information:

1. Course Aims:

The course presents the fundamentals of pharmacotherapeutics and the pharmaceutical care plan of common diseases for different body organs as: gynecological, rheumatic, renal and CNS diseases.



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2. Course Key elements

Upon completing the course, the student will be able to dominate the following key elements

Domain 1- fundamental knowledge

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 1.1.1 | 1.1.1.1 | Describe the definition, risk factors, pathophysiology, clinical presentation, relevant laboratory investigation of the different diseases introduced; hypertension, heart failure, acute coronary syndrome, dyslipidemia, acute renal failure, chronic renal disease, rheumatic diseases, and gynecological diseases. |
| 1.1.4 | 1.1.4.1 | Describe the different pharmacological and non-pharmacological measures for selected diseases. |
| 1.1.5 | 1.1.5.1 | Explain an individualized optimum therapeutic plan for disease management. |

Domain 2: professional and ethical practice

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|---|
| 2.4.3 | 2.4.3.1 | Assess patient's drug-related problems, adverse drug reactions. |
| 2.4.5 | 2.4.5.1 | Illustrate signs and symptoms of referral or emergency requirement for selected diseases. |

DOMAIN 3: Pharmaceutical care

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|---|
| 3.1.1 | 3.1.1.1 | Calculate the patients' doses adjustment in special disease situations. |
| 3.2.5 | 3.2.5.1 | Design a professional patient counseling session to optimize outcomes of the pharmaceutical care plan, and collaboration with other healthcare professionals. |
| 3.2.7 | 3.2.7.1 | Detection and management of drugs-related problems in patient case presentation. |



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Domain 4: personal practice

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|---|
| 4.1.1 | 4.1.1.1 | Collaborate efficiently with health care professionals in all decision-making activities to improve healthcare service. |
| 4.3.2 | 4.3.2.1 | Improving professional skills through self-learning and training. |

3. Course Contents

| Week No. | Theoretical topics | Hours |
|----------|--|-------|
| 1 | Hypertension: definition, risk factors, pathophysiology, clinical presentation, diagnosis and management | 1 |
| 2 | Heart Failure: definition, risk factors, pathophysiology. | 1 |
| 3 | Heart Failure: , clinical presentation, diagnosis and management | 1 |
| 4 | Acute coronary syndrome: definition, risk factors, pathophysiology. | 1 |
| 5 | Acute coronary syndrome: clinical presentation, diagnosis and management | 1 |
| 6 | Dyslipidemia: definition, risk factors, pathophysiology, clinical presentation, diagnosis and management | 1 |
| 7 | Dyslipidemia: clinical presentation, diagnosis and management | 1 |
| 8 | Acute renal failure: definition, risk factors, pathophysiology, clinical presentation, diagnosis and management | 1 |
| 9 | Acute renal failure: clinical presentation, diagnosis and management | 1 |
| 10 | Chronic renal disease: definition, risk factors, pathophysiology. | 1 |
| 11 | Chronic renal disease: clinical presentation, diagnosis and management | 1 |
| 12 | Rheumatic diseases: definition, risk factors, pathophysiology. | 1 |
| 13 | Rheumatic diseases: clinical presentation, diagnosis and management | 1 |
| 14 | Gynecological diseases: definition, risk factors, pathophysiology (self-learning) | 1 |
| 15 | Compensatory and alternative lecture | 1 |
| 16 | Revision and quiz | 1 |
| 17 | Final written and oral exam | |



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| Week No. | Tutorial topics | Hours |
|----------|---|-------|
| 1 | Case study: Hypertension | 1 |
| 2 | Case study: Heart Failure | 1 |
| 3 | Case study: Acute coronary syndrome | 1 |
| 4 | Case study: Acute coronary syndrome (cont.) | 1 |
| 5 | Case study: Dyslipidemia | 1 |
| 6 | Case study: Dyslipidemia (cont.) | 1 |
| 7 | Case study: Acute renal failure | 1 |
| 8 | Midterm exam | - |
| 9 | Case study: Chronic renal disease | 1 |
| 10 | Case study: Chronic renal disease (cont.) | 1 |
| 11 | Case study: Rheumatic diseases | 1 |
| 12 | Case study: Rheumatic diseases (cont.) | 1 |
| 13 | Case study: Gynecological diseases | 1 |
| 14 | Case study: Gynecological diseases (cont.) | 1 |
| 15 | Revision and activity | 1 |
| 16 | Tutorial exam | 1 |

4. Teaching and Learning Methods:

| | Teaching and Learning Methods | Week | k. elements to be addressed |
|-----|--|------|---|
| 4.1 | Computer aided learning: a. Lectures using Data show, power Point presentations b. Distance learning <ul style="list-style-type: none"> ● On line learning through my-mans "Mansoura university "as recorded – video lectures ● Inter active discussion through My Mans | 1-16 | 1.1.1.1/1.1.4.1/1.1.5.1/ 2.4.3.1/2.4.5.1 |
| 4.2 | Tutorial sessions | 1-16 | 3.1.1.1/3.2.5.1/ 3.2.7.1/4.1.1.1/4.3.2.1 |
| 4.3 | Self-learning | 14 | 4.1.1.1/4.3.2.1 |
| 4.4 | Class Activity: Group discussion offline or online. | 1-14 | 3.1.1.1/3.2.5.1/ 3.2.7.1/4.1.1.1/4.3.2.1 |
| 4.5 | Problem – based learning and brainstorming | 1-14 | 3.1.1.1/3.2.5.1/ 3.2.7.1/4.1.1.1/4.3.2.1 |
| 4.6 | Research assignments | 14 | 4.1.1.1/4.3.2.1 |
| 4.7 | Role play | 14 | 4.1.1.1/4.3.2.1 |



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5. Student Assessment:

a- Assessment Methods:

| | |
|--|--|
| 1-Written exam | 1.1.1.1/1.1.4.1/1.1.5.1/2.4.3.1/2.4.5.1 |
| 2- Tutorial (sheet) exam | 3.1.1.1/3.2.5.1/3.2.7.1/4.1.1.1/4.3.2.1 |
| 3-Oral | 1.1.1.1/1.1.4/1/1.1.5.1/2.4.3.1/2.4.5.1/3.1.1.1/3.2.5.1/3.2.7.1/4.1.1.1/4.3.2.1 |
| 4- Periodical (Mid-term exam) / Course work | 1.1.1.1/1.1.4/1/1.1.5.1/2.4.3.1/2.4.5.1 |

b- Assessment schedule

| | | |
|---------------------|-----------------------------|---|
| Assessment 1 | Periodical/ Mid-term | 7-9th week |
| Assessment 2 | Tutorial | 16th week |
| Assessment 3 | Written | Starting from 17th week |
| Assessment 4 | Oral | Starting from 17th week |

c- Weighing of assessments

| | | |
|--------------|---|--------------|
| 1 | Periodical/Mid-term examination / Class work | 15% |
| 2 | Tutorial examination | 25 % |
| 3 | Final-term examination | 50% |
| 4 | Oral examination | 10% |
| 5 | Other types of assessment | ----- |
| Total | | 100% |

6. Facilities required for teaching and learning

| | |
|------------------------------|---|
| Classroom | Data show- Computers, Internet, Platform |
| Laboratory facilities | Data show- Computers, Internet, Platform |
| Library | Books and mobile applications |



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7. List of References

| No | Reference | Type |
|----|--|----------------|
| 1. | Lecture notes prepared by teaching by professors | Course notes |
| 2. | A Pathophysiologic Approach, Eleventh Edition By: Joseph T. DiPiro, Gary C. Yee, L. Michael Posey, Stuart T. Haines, Thomas D. Nolin Published: June 2020 ISBN: 978126011681623. | Essential Book |
| 3- | http://www.sciencedirect.com / http://www.google.com / http://www.pubmed.com https://www.ekb.eg | websites |



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8. Matrix 1. Course contents and course key elements

| Course contents | Outcomes Domains / Key elements | | | | | | | | | |
|-------------------------|------------------------------------|---------|---------|----------|---------|----------|---------|---------|----------|---------|
| | Domain 1 | | | Domain 2 | | Domain 3 | | | Domain 4 | |
| | 1.1.1.1 | 1.1.4.1 | 1.1.5.1 | 2.4.3.1 | 2.4.5.1 | 3.1.1.1 | 3.2.5.1 | 3.2.7.1 | 4.1.1.1 | 4.3.2.1 |
| Theoretical part | | | | | | | | | | |
| Hypertension | √ | √ | √ | √ | √ | | √ | √ | | |
| Heart Failure | √ | √ | √ | √ | √ | √ | √ | √ | | |
| Heart Failure | √ | √ | √ | √ | √ | √ | √ | √ | | |
| Acute coronary syndrome | √ | √ | √ | √ | √ | | | | | |
| Acute coronary syndrome | √ | √ | √ | √ | √ | | | | | |
| Dyslipidemia | | | | | √ | | √ | | √ | |
| Dyslipidemia | | | | | √ | | √ | | √ | |
| Acute renal failure | √ | √ | √ | √ | √ | √ | | √ | √ | |
| Acute renal failure | √ | √ | √ | √ | √ | √ | | √ | √ | |
| Chronic renal disease | √ | | √ | | √ | √ | √ | | √ | |
| Chronic renal disease | √ | | √ | | √ | √ | √ | | √ | |
| Rheumatic diseases | √ | √ | √ | √ | | | √ | | √ | |



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| Rheumatic diseases | √ | √ | √ | √ | | | √ | | √ | |
|--|---|----------------|----------------|-----------------|----------------|-----------------|----------------|----------------|-----------------|----------------|
| Gynecological diseases (Self-learning) | Outcomes Domains/ Key elements | | | √ | | | √ | | √ | |
| Course contents | Domain 1 | | | Domain 2 | | Domain 3 | | | Domain 4 | |
| | 1.1.1.1 | 1.1.4.1 | 1.1.5.1 | 2.4.3.1 | 2.4.5.1 | 3.1.1.1 | 3.2.5.1 | 3.2.7.1 | 4.1.1.1 | 4.3.2.1 |
| Tutorial part | | | | | | | | | | |
| Case study: Hypertension | √ | √ | √ | √ | √ | | √ | √ | | |
| Case study: Heart Failure | √ | √ | √ | √ | √ | √ | √ | √ | | |
| Case study: Acute coronary syndrome | √ | √ | √ | √ | √ | | | | | |
| Case study: Acute coronary syndrome (cont.) | √ | √ | √ | √ | √ | | | | | |
| Case study: Dyslipidemia | | | | | √ | | √ | | √ | |
| Case study: Dyslipidemia (cont.) | | | | | √ | | √ | | √ | |
| Case study: Acute renal failure | √ | √ | √ | √ | √ | √ | | √ | √ | |
| Case study: Chronic renal disease | √ | | √ | | √ | √ | √ | | √ | |
| Case study: Chronic renal disease | √ | | √ | | √ | √ | √ | | √ | |
| Case study: Rheumatic diseases | √ | √ | √ | √ | | | √ | | √ | |
| Case study: Rheumatic diseases | √ | √ | √ | √ | | | √ | | √ | |



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| | | | | | | | | | | |
|------------------------------------|---|---|---|---|--|--|---|--|---|--|
| Case study: Gynecological diseases | √ | √ | √ | √ | | | √ | | √ | |
|------------------------------------|---|---|---|---|--|--|---|--|---|--|

Matrix 2. Between course contents, methods of learning and assessment

| A) Theoretical Part: | | | | | | | | | | |
|---------------------------------|--------------------------------------|----------------|-------------------|-----------------|------------|---------------|---------------------------|----------|---------|------|
| Course Contents | Teaching and Learning Methods | | | | | | Assessment methods | | | |
| | Lecture | Online lecture | Tutorial sessions | Problem solving | Case Study | Self-learning | Corse Work | Tutorial | Written | Oral |
| Hypertension | √ | | | | √ | | √ | | √ | √ |
| Heart Failure | √ | | | | √ | | √ | | √ | √ |
| Heart Failure (cont.) | √ | | | | √ | | √ | | √ | √ |
| Acute coronary syndrome | √ | | | | √ | | √ | | √ | √ |
| Acute coronary syndrome (cont.) | √ | | | | √ | | √ | | √ | √ |
| Dyslipidemia | √ | | | | √ | | √ | | √ | √ |
| Dyslipidemia (cont.) | √ | | | | √ | | √ | | √ | √ |
| Acute renal failure | √ | | | | √ | | √ | | √ | √ |
| Acute renal failure(cont.) | √ | | | | √ | | √ | | √ | √ |
| Chronic renal disease | √ | | | | √ | | | | √ | √ |
| Chronic renal disease (cont.) | √ | | | | √ | | | | √ | √ |
| Rheumatic diseases | √ | | | | √ | | | | √ | √ |



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| | | | | | | | | | | |
|--|---|--|--|--|---|---|--|--|---|---|
| Rheumatic diseases (cont.) | √ | | | | √ | | | | √ | √ |
| Gynecological diseases (Self-learning) | √ | | | | √ | √ | | | √ | √ |

B) Tutorial Part:

| Course Contents | Teaching and Learning Methods | | | | | | Assessment methods | | | |
|---|-------------------------------|----------------|-------------------|-----------------|------------|---------------|--------------------|----------|---------|------|
| | Lecture | Online lecture | Tutorial sessions | Problem solving | Case Study | Self-learning | Course Work | Tutorial | Written | Oral |
| Case study: Hypertension | | | √ | | √ | | | √ | | |
| Case study: Heart Failure | | | √ | | √ | | | √ | | |
| Case study: Acute coronary syndrome | | | √ | | √ | | | √ | | |
| Case study: Acute coronary syndrome (cont.) | | | √ | | √ | | | √ | | |
| Case study: Dyslipidemia | | | √ | | √ | | | √ | | |
| Case study: Dyslipidemia (cont.) | | | √ | | √ | | | √ | | |
| Case study: Acute renal failure | | | √ | | √ | | | √ | | |
| Case study: Chronic renal disease | | | √ | | √ | | | √ | | |
| Case study: Chronic renal disease (cont.) | | | √ | | √ | | | √ | | |
| Case study: Rheumatic diseases | | | √ | | √ | | | √ | | |



**Course Specification
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| | | | | | | | | | | |
|--|--|--|---|--|---|--|--|---|--|--|
| Case study: Rheumatic diseases (cont.) | | | √ | | √ | | | √ | | |
| Case study: Gynecological diseases | | | √ | | √ | | | √ | | |
| Case study: Gynecological diseases (cont.) | | | √ | | √ | | | √ | | |



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Quality Assurance unit



Course specification
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| | |
|---------------------------|--|
| Course Coordinator | Dr. Mona Mohammed Eltamalawy |
| | <i>Mona Eltamalawy</i> |
| Head of Department | Professor Mohamed El-Houseiny Shams |
| | <i>Mohamed El-Houseiny Shams</i> |

Date: 7 /9 /2023



Mansoura University
Faculty of Pharmacy
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Course specification
2023- 2024
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بكالوريوس الصيدلة (فارم دي – Pharm D)

Course Specification

Academic year: 2023/2024

| | |
|--|---|
| Course Name: Entrepreneurship | اسم المقرر : ريادة الأعمال |
| Academic Level: level 5 | المستوى الأكاديمي : الخامس |
| Scientific Department: Pharmaceutical Analytical chemistry | القسم العلمي : الكيمياء التحليلية الصيدلية |
| Head of Department: Prof. Dr. Jenny Jehan Nasr | رئيس القسم : أ.د/ جيني جيهان نصر |
| Course Coordinator: Dr. Heba Samir Elama | منسق المقرر: د. هبة سمير الأعمى |



Mansoura University
Faculty of Pharmacy
Quality Assurance unit



Course specification
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Pharm D Program

| | |
|--|-------------------------------------|
| University | Mansoura |
| Faculty | Pharmacy |
| Department offering the course | Pharmaceutical Analytical Chemistry |
| Department supervising the course | Pharmaceutical Analytical Chemistry |
| Program on which the course is given | Bachelor in Pharmacy-Pharm D |
| Academic Level | Level 5, Second Semester, 2023/2024 |
| Date of course specification approval | 10/9/2023 |

A. Basic Information: Course data:

| | |
|---------------------------------------|-------------------------|
| Course Title | Entrepreneurship |
| Course Code | UR 5 |
| Prerequisite | Registration |
| Teaching Credit Hours: Lecture | 1 |
| : Practical | 0 |
| Total Credit Hours | 1 |

B. Professional Information:

1- Course Aims:

This course enables the students to:

- Enhance student’s knowledge in leadership, business, and financial skills in pharmacy practice while learning the traits of an entrepreneur, current topics in entrepreneurship with a specific focus on pharmacy practice and patient care programs.
- Understand a comprehensive set of critical skills needed to develop a profitable business project.



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- Identify and explain the personal and business tools including risk-taking, strategic planning, marketing, competitiveness, and social responsibility to make the transition from the academic environment to the daily practice of pharmacy now and in the future, with an emphasis on entrepreneurship.

2- Course key Elements:

Upon completing the course, the student will be able to dominate the following key elements

Domain 1- fundamental knowledge

| Program Key Element No. | Course Key Element No. | Course Key Element |
|-------------------------|------------------------|---|
| 1.1.1 | 1.1.1.1 | Recognize in depth and breadth knowledge of social, behavioral, and administrative entrepreneur sciences. |

Domain 2: professional and ethical practice

| Program Key Element No. | Course Key Element No. | Course Key Element |
|-------------------------|------------------------|---|
| 2.6.1 | 2.6.1.1 | Utilize and apply the principles of business administration and management to ensure rational use of financial and human resources. |
| 2.6.2 | 2.6.2.1 | Apply the principles of sales, marketing, and entrepreneurship. |

Domain 4: Personal Practice:

| Program key element no. | Course key element no. | Course key element |
|-------------------------|------------------------|--|
| 4.1.2 | 4.1.2.1 | Participate collaboratively and independently in a team. |
| 4.1.3 | 4.1.3.1 | Demonstrate innovation and apply entrepreneurial skills within a simulated entrepreneurial activity. |



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| | | |
|-------|---------|---|
| 4.2.1 | 4.2.1.1 | Communicate effectively in a proper professional language by verbal and non-verbal means. |
| 4.3.2 | 4.3.2.1 | Practice self-learning to enhance continuous personal development and life-long learning. |

3- Course Contents:

| Week No. | Topics | Lecture credit Hours |
|----------|---|----------------------|
| 1 | Innovation and technology | 1 |
| 2 | Diffusion of Innovation | 1 |
| 3 | Important definition: Entrepreneur and minimum viable product (MVP) | 1 |
| 4 | Types of Entrepreneurs Self study (How to design a strategic plan) | 1 |
| 5 | Market research Self study (Business canvas) | 1 |
| 6 | Business Model Canvas | 1 |
| 7 | Presentation | 1 |
| 8 | Pitching | 1 |
| 9 | The different sources of funding for startups | 1 |
| 10 | The SCAMPER technique for ideation | 1 |
| 11 | Design Thinking | 1 |
| 12 | Entrepreneurship | 1 |
| 13 | Entrepreneur characteristics | 1 |



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Quality Assurance unit



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| | | |
|----|--|---|
| 14 | Entrepreneur characteristics (continued) | 1 |
| 15 | Compensatory and alternative lecture | 1 |
| 16 | Revision and quiz | 1 |
| 16 | Final written exam | - |

4- Teaching and learning Methods:

| No. | Teaching and learning Methods | Week No. | Key element to be addressed |
|-----|---|----------|---|
| 4.1 | Computer aided learning: a. Lectures using Data Show, Power Point Presentations b. Distance learning <ul style="list-style-type: none"> Online learning through My Mans "Mansoura university "as recorded – video lectures. Interactive discussion through My Mans (Microsoft teams) | 1-16 | 1.1.1.1, 2.6.1.1, 2.6.2.1, 4.1.2.1, 4.1.3.1, 4.2.1.1, 4.3.2.1 |
| 4.2 | Self-learning | 4 & 5 | 1.1.1.1, 2.6.1.1, 2.6.2.1, 4.1.2.1, 4.1.3.1, 4.2.1.1, 4.3.2.1 |
| 4.3 | Class Activity: Group discussion offline and online | 2-13 | 1.1.1.1, 2.6.1.1, 2.6.2.1, 4.1.2.1, 4.1.3.1, 4.2.1.1, 4.3.2.1 |
| 4.4 | Problem – based learning and brainstorming | 1-16 | 1.1.1.1, 2.6.1.1, 2.6.2.1, 4.1.3.1, 4.2.1.1 |
| 4.5 | Research assignments | 7 & 8 | 1.1.1.1, 2.6.1.1, 2.6.2.1, 4.1.2.1, 4.1.3.1, 4.2.1.1, 4.3.2.1 |

5- Student Assessment:



a- Assessment Methods:

| Assessment Methods | Key elements to be assessed |
|--|---|
| 1-Written exam | 1.1.1.1, 2.6.1.1, 2.6.2.1, 4.1.2.1, 4.1.3.1, 4.2.1.1, 4.3.2.1 |
| 2- Periodical (Midterm exam) / Course work | 1.1.1.1, 2.6.1.1, 2.6.2.1, 4.1.2.1, 4.1.3.1, 4.2.1.1, 4.3.2.1 |

b. Assessment schedule

| | | |
|--------------|-------------------------------|---------------------------------------|
| Assessment 1 | Periodical exam / Course work | 7 th -9 th week |
| Assessment 2 | Written theoretical exam | 17 th week |

c. Weighing of assessments

| | | |
|-------|---------------------------------------|-------|
| 1 | Periodical exam / Course work | 25 % |
| 2 | Final theoretical written examination | 75 % |
| Total | | 100 % |

6-Facilities required for teaching and learning

| | |
|--------------|---|
| - Class room | Data show- Computers, Internet. (Available) |
|--------------|---|

7- List of References

| No. | Reference | Type |
|-----|--|--------------------|
| 1. | Electronic book prepared by staff members | Course notes |
| 2. | Recorded videos prepared by staff members | Videos on platform |
| 3. | Lambing PA, Kuehl CR. Entrepreneurship. Upper Saddle River, NJ: Prentice Hall; 2003. | Book |



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| | | |
|----|--|----------|
| 4. | Mattingly TJ, Mullins CD, Melendez DR, Boyden K, Eddington ND. Entrepreneurship in pharmacy practice and education: a systematic review. Am J Pharm Educ. 2019;83(3):7233. | Book |
| 5. | Drobyazko S, Hryhoruk I, Pavlova H, Volchanska L, Sergiychuk S. Entrepreneurship innovation model for telecommunications enterprises. Journal of Entrepreneurship Education. 2019 Jul 1;22(2):1-6. | Book |
| 6. | Chisholm-Burns MA, Vaillancourt AM, Shepherd M. Pharmacy Management, Leadership, Marketing, and Finance (Book Only). Jones & Bartlett Publishers; 2012 Oct 4. | Book |
| 7. | https://www.ekb.eg https://www.wix.com/blog/2021/07/types-of-entrepreneurship/ https://www.investopedia.com/terms/e/entrepreneur.asp https://bvius.com/commerce/what-is-entrepreneurship/ | websites |



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Course specification
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8- Matrix of course content versus course k. elements:

| Course contents / Key elements | Domain 1 | Domain 2 | | Domain 4 | | | |
|---|----------|----------|---------|----------|---------|---------|---------|
| | 1.1.1.1 | 2.6.1.1 | 2.6.2.1 | 4.1.2.1 | 4.1.3.1 | 4.2.1.1 | 4.3.2.1 |
| Innovation and technology | ✓ | ✓ | ✓ | | | | |
| Diffusion of Innovation | ✓ | ✓ | ✓ | ✓ | | | |
| Important definition: Entrepreneur and minimum viable product (MVP) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Types of Entrepreneurs Self study (How to design a strategic plan) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Market research Self study (Business canvas) | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ |
| Business Model Canvas | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Presentation | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |



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| | | | | | | | | | |
|---|---|--|---|---|--|---|---|---|--|
| Pitching | ✓ | | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| The different sources of funding for startups | ✓ | | ✓ | ✓ | | | | | |
| The SCAMPER technique for ideation | ✓ | | ✓ | ✓ | | | | | |
| Design Thinking | ✓ | | ✓ | ✓ | | | | | |
| Entrepreneurship | ✓ | | ✓ | ✓ | | | | | |
| Entrepreneur characteristics | ✓ | | ✓ | ✓ | | | | | |
| Entrepreneur characteristics (continued) | ✓ | | ✓ | ✓ | | | | | |



**Course Specification
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Matrix 2. between course contents, methods of learning and assessment


| A) Theoretical Part: | | | | | | | | | |
|--|-------------------------------|-------------------------------|--------------|------------------|-----------------|---------------|--------------------|-------------------|-------------|
| Course Contents | Teaching and Learning Methods | | | | | | Assessment Methods | | |
| | Lecture | Online interactive discussion | Record video | Group discussion | Problem solving | Self-learning | Written | Periodical Midter | Course work |
| Innovation and technology | √ | | √ | √ | | | √ | √ | √ |
| Diffusion of Innovation | √ | | √ | √ | | | √ | √ | |
| Important definition: Entrepreneur and minimum viable product (MVP) | √ | | √ | √ | √ | | √ | √ | √ |
| Types of Entrepreneurs | | √ | | | | | | | |
| Self study (How to design a strategic plan) | √ | | √ | √ | √ | √ | √ | √ | |
| Market research | | | | | | | | | |
| Self study (Business canvas) | √ | | √ | √ | √ | √ | √ | | √ |
| Business Model Canvas | √ | √ | √ | √ | √ | | √ | | |
| Presentation | √ | √ | √ | √ | | | √ | | |
| Pitching | √ | | √ | √ | | | √ | | √ |



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| | | | | | | | | | |
|---|---|--|---|---|---|---|---|--|---|
| The different sources of funding for startups | √ | | √ | √ | √ | | √ | | |
| The SCAMPER technique for ideation | √ | | √ | √ | | | √ | | |
| Design Thinking | √ | | √ | √ | | | √ | | √ |
| Entrepreneurship | √ | | √ | √ | | | √ | | |
| Entrepreneur characteristics | √ | | √ | √ | √ | √ | √ | | |
| Entrepreneur characteristics (continued) | √ | | √ | √ | √ | √ | √ | | |

| | |
|---------------------------|---|
| Course Coordinator | Dr. Heba Samir Elama |
| Head of Department | Prof. Dr. jenny Jeehan Mohamed Ahmed Nasr  |

Date: 10/ 9 / 2023



Course Specification
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Faculty of Pharmacy
Mansoura University



بكالوريوس الصيدلة

(Credit hours)

Course Specification

Academic year: 2023/2024

| | |
|---|--|
| Course name: Public Health | صحة عامة : اسم المقرر |
| Academic Level: level 5 | الخامس: المستوى الأكاديمي |
| Scientific department: Microbiology and Immunology | الميكروبيولوجي : القسم العلمي و المناعة |
| Head of Department: Prof. El-Sayed El-sherbieny | : رئيس القسم ا.د/ السيد الشربيني حبيب |
| Course Coordinator: To be nominated | : منسق المقرر ا.د / مني شعبان Mona Shaaban |



**Course Specification
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Pharm D Program
Faculty of Pharmacy
Mansoura University**



| | |
|--|---|
| University | Mansoura |
| Faculty | Pharmacy |
| Department offering the course | Microbiology and Immunology |
| Department supervising the course | Microbiology and Immunology |
| Program on which the course is given | Bachelor in Pharmacy- Credit hours |
| Academic Level | Level 5 , 2nd, 2022/2023 |
| Date of course specification approval | 18/9/2023 |

A. Basic Information: Course data:

| | |
|---|---------------|
| Course Title | Public health |
| Course Code | PM 526 |
| Prerequisite | Registration |
| Teaching Hours: Lecture | 2 |
| Teaching Credit Hours: Practical/ tutorial | 0 |
| Total Credit Hours | 2 |

B. Professional Information:

1 .Course Aims:

1. Orienting the students to epidemiology and principles of maintaining good health
2. Recognizing different types of types of diseases and their etiology.
3. Knowing applications of different treatment strategies and immunization techniques and good nutrition to control different and prevent diseases



**Course Specification
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2- Course k. elements:

Upon completing the course, the student will be able to dominate the following key elements

Domain 1- fundamental knowledge

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 1.1.1 | 1.1.1.1 | Recall the basic Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences. |
| 1.1.5 | 1.1.5.1 | Utilize different principles and health problems related to different fields of life to improve health. |
| 1.1.6 | 1.1.6.1 | Analyze available information and health problems related to different fields of life to prevent and minimize different health problems. |

Domain 2: Professional and Ethical Practice

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|---|
| 2.1.1 | 2.1.1.1 | Make the best use of knowledge regarding maternal, child and patient health to prevent expected diseases complications. |
| 2.1.3 | 2.1.3.1 | Cooperate professionally with health care team members to prevent disease |

Domain 3: pharmaceutical care

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 3.1.2 | 3.1.2.1 | Develop appropriate methods of infection control to limit infections and promote public health awareness. |
| 3.1.4 | 3.1.4.1 | Formulate a systemic approach for the laboratory diagnosis of common infectious clinical conditions and select the most appropriate and cost effective tool leading to the identification of the causative organism. |
| 3.2.6 | 3.2.6.1 | Spread awareness regarding immunization strategies. |



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Domain 4: personal practice:

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|---|
| 4.1.1 | 4.1.1.1 | Apply medical knowledge to participate in decision making required for solving of different health problems |
| 4.1.2 | 4.1.2.1 | Participate in developing solutions and preventive measures to avoid diseases or minimize the related complications |
| 4.2.1 | 4.2.1.1 | Use the correct medical terms related to different disease when dealing with different members of the community. |

3- Course Content:

| Week No | Topics | Lecture credit hours | Practical / Tutorial credit hours |
|---------|--------------------------------------|----------------------|-----------------------------------|
| 1 | Introduction | 2 | - |
| 2 | Airborne diseases (Part I) | 2 | - |
| 3 | Airborne diseases (Part II) | 2 | - |
| 4 | Food and water borne diseases | 2 | - |
| 5 | Contact diseases | 2 | - |
| 6 | Zoonotic diseases | 2 | - |
| 7 | Occupational diseases | 2 | - |
| 8 | Nosocomial Infections | 2 | - |
| 9 | Non-communicable diseases | 2 | - |
| 10 | Immunization | 2 | - |
| 11 | Maternal and Child Health | 2 | - |
| 12 | Waste management | 2 | - |
| 13 | Waste management (continued) | 2 | - |
| 14 | Self- learning topic | 2 | - |
| 15 | Compensatory and alternative lecture | 2 | - |
| 16 | Revision and quiz | 2 | - |
| 17 | Final written and oral exam | | |



**Course Specification
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4- Teaching and Learning Methods:

| no. | Teaching and Learning Methods | week | k.elements to be addressed |
|-----|--|------|--|
| 5.1 | Computer aided learning: a. Lectures using Data show, power Point presentations b. Distance learning <ul style="list-style-type: none"> On line learning through my mans "Mansoura university "as recorded – video lectures Inter active discussion through My Mans | 1-16 | 1.1.1.1, 1.1.5.1, 1.1.6.1,2.1.1.1, 2.1.3.1, 2.1.3.1, 3.1.2.1,3.1.4.1,3.2.6.1 ,4.1.2.1,4.2.1.1, 4.1.1.1 |
| 5.2 | Self-learning | 13 | 4.1.1.1,4.1.2.1,4.2.1.1 |
| 5.3 | Class Activity: Group discussion offline and online. | 12 | |
| 5.4 | Formative Assignments | 11 | |

5- Student Assessment:

a- Assessment Methods:

| | |
|-------------------------|--|
| 1. Mid-term exam | 1.1.1.1, 1.1.5.1, 1.1.6.1, 2.1.1.1, 2.1.3.1, 3.1.2.1,3.1.4.1,3.2.6.1 |
| 2. Written exam | 1.1.1.1, 1.1.5.1, 1.1.6.1,2.1.1.1, 2.1.3.1, 3.1.2.1,3.1.4.1,3.2.6.1 |
| 3. Oral | 1.1.1.1, 1.1.5.1,1.1.6.1,2.1.1.1, 2.1.3.1, 3.1.2.1,3.1.4.1,3.2.6.1 ,4.1.2.1,4.2.1.1, 4.1.1.1 |

b. Assessment schedule

| | | |
|---------------------|----------------------|--|
| Assessment 1 | Mid-term exam | 7-9th week |
| Assessment 3 | Written | Start from 17th week |
| Assessment 4 | Oral | Start from 17th week |

c. Weighing of assessments

| | | | |
|-----------|--------------|-------------------------------|-------------|
| 6- | 1 | Mid-term examination | 10 % |
| | 2 | Final-term examination | 75 % |
| | 3 | Oral examination | 15 % |
| | Total | | 100% |

Facilities required for teaching and learning

| | |
|-------------|---------------------------------|
| -Class room | Data show- Computers, Internet. |
|-------------|---------------------------------|



**Course Specification
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7- List of References

| N o | Reference | Type |
|--------|--|---------------------------|
| 1 | Electronic book prepared by staff members | Course notes |
| 2 | Recorded videos prepared by staff members | Videos on platform |
| 3 | Mitchell, Amber Hogan, 2020. Preventing Occupational Exposures to Infectious Disease in Health Care. A practical guide. Springer | Book |
| 4 | Pinger, R.R. and Seabert, D., 2016. <i>An introduction to community & public health</i> . 9 th edition, Jones & Bartlett Learning. | Book |
| 5 | Edelman, C.L., Mandle, C.L. and Kudzma, E.C., 2017. <i>Health promotion throughout the life span-e-book</i> . Elsevier Health Sciences | Book |
| 6 | Perry, S.E., Hockenberry, M.J., Alden, K.R., Lowdermilk, D.L., Cashion, M.C. and Wilson, D., 2017. <i>Maternal Child Nursing Care E-Book</i> Mosby | Book |
| 7 | Kasenga, F. ed., 2016. <i>Epidemiology of Communicable and Non-Communicable Diseases: Attributes of Lifestyle and Nature on Humankind</i> . BoD–Books on Demand. | Book |
| 8 | http://www.sciencedirect.com / http://www.google scholar.com / http://www.pubmed.com https://www.ekb.eg | websites |



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Matrix 1: Course content and course key elements:

| Course contents | Domain 1 | | | Domain 2 | | Domain 3 | | | Domain 4 | | |
|--------------------------------------|----------|---------|---------|----------|---------|----------|---------|---------|----------|---------|---------|
| | 1.1.1.1 | 1.1.5.1 | 1.1.6.1 | 2.1.1.1 | 2.1.3.1 | 3.1.2.1 | 3.1.4.1 | 3.2.6.1 | 4.1.1.1 | 4.1.2.1 | 4.2.1.1 |
| Introduction | √ | √ | √ | | | | | √ | | | |
| Airborne diseases (Part I) | √ | √ | √ | | √ | | | √ | | | |
| Airborne diseases (Part II) | √ | √ | √ | | √ | | | √ | | | |
| Food and water borne diseases | | √ | √ | | √ | | | √ | | | |
| Contact diseases | | √ | √ | | √ | | | √ | √ | √ | |
| Zoonotic diseases | √ | √ | √ | | √ | | | √ | √ | √ | |
| Occupational diseases | | √ | √ | | | | | √ | √ | √ | |
| Nosocomial Infections | √ | √ | √ | | √ | | | √ | √ | √ | |
| Non-communicable diseases | | √ | √ | | | | | √ | √ | √ | |
| Immunization | √ | √ | √ | | √ | | | √ | √ | √ | |
| Maternal and Child Health | | √ | √ | | | | | √ | √ | √ | |
| Waste management | | √ | √ | | √ | | | √ | √ | √ | |
| Waste management (continued) | | √ | √ | | √ | | | √ | √ | √ | |
| Self- learning topic | | | | | | | | √ | √ | √ | |



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Matrix 2: between course content, methods of learning and assessment

| A) Theoretical Part: | | | | | | | | |
|--------------------------------------|--------------------------------------|----------------|------------------|------------|---------------|---------------------------|---------|------|
| Course Contents | Teaching and Learning Methods | | | | | Assessment methods | | |
| | Lecture | Online lecture | Group discussion | Case Study | Self-learning | Course Work | Written | Oral |
| Introduction | √ | | √ | | | √ | √ | √ |
| Airborne diseases (Part I) | √ | | √ | | | √ | √ | √ |
| Airborne diseases (Part II) | √ | | √ | | | √ | √ | √ |
| Food and water borne diseases | √ | | √ | | | √ | √ | √ |
| Contact diseases | √ | | √ | | | | √ | √ |
| Zoonotic diseases | √ | | √ | | | | √ | √ |
| Occupational diseases | √ | | √ | | | | √ | √ |
| Nosocomial Infections | √ | | √ | | | | √ | √ |
| Non-communicable diseases | √ | | √ | | | | √ | √ |
| Immunization | √ | | √ | | √ | | √ | √ |
| Maternal and Child Health | √ | | √ | | | | √ | √ |
| Waste management | √ | | √ | | | | √ | √ |
| Waste management (continued) | √ | | √ | | | | √ | √ |
| Self- learning topic | √ | √ | √ | | √ | | √ | √ |



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| | |
|-----------------------------|---|
| Course Coordinator : | Prof. Dr. Mona Shaaban <i>Mona Shaaban</i> |
| Head of department | Prof. Dr. El Sayed El Sherbiny Habib |

Date: 18/9/2023



Course Specification
2023- 2024
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Faculty of Pharmacy
Mansoura University



بكالوريوس الصيدلة (فارم د – Pharm D)

Course Specification

Academic year: 2023/2024

| | |
|--|-----------------------------------|
| Course name: Professional Ethics | اسم المقرر: |
| Academic Level: Level 5 | المستوى الأكاديمي: الخامس |
| Scientific department: | القسم العلمي: الادوية والسموم |
| Head of Department: | رئيس القسم: أد/ منار أحمد نادر |
| Course Coordinator: Dr. Mirhan N. Makled | منسق المقرر : ميرهان احمد نضمي |



**Course Specification
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Pharm D Program
Faculty of Pharmacy
Mansoura University**



| | |
|--|-------------------------------------|
| University | Mansoura |
| Faculty | Pharmacy |
| Department offering the course | Pharmacology and Toxicology |
| Department supervising the course | Pharmacology and Toxicology |
| Program on which the course is given | Bachelor in Pharmacy- Pharm D |
| Academic Level | Level 5, Second semester, 2023/2024 |
| Date of course specification approval | 2023/9/18 |

A. Basic Information: Course data:

| | |
|---|---------------------|
| Course Title | Professional ethics |
| Course Code | NP 525 |
| Prerequisite | Registration |
| Teaching credit Hours: Lecture | 1 |
| Teaching Credit Hours: Practical/ tutorial | 0 |
| Total Credit Hours | 1 |

B. Professional Information:

1. Course Aims:

This course enables the students to:

- Recognizing the general principles of pharmacy and medical ethics including patients' rights and respect population diversity.
- Addressing problems on conflicts of interests and the management of pharmacists' relationship with society family and environment.
- Applying technology platform to filter and manage overwhelming information.
- Developing reliable solution for complex ethical scenarios as in disaster and medication error.
- Implementing guidelines of research ethics on human and animal.



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2- Course k. elements:

Upon completing the course, the student will be able to dominate the following key elements

Domain 1: Fundamental Knowledge

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|---|
| 1.1.5 | 1.1.5.1 | Identify and describe relevant theoretical concepts related to professional ethics to solve problems related to ethics related to the human health and pharmaceutical research. |

Domain 2: Professional and Ethical Practice

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 2.1.1 | 2.1.1.1 | Apply legal requirements to practice, including legislation, policies, by-laws, and standards for individuals and healthcare professional team |
| 2.1.2 | 2.1.2.1 | Apply the principles of professional codes of ethics that preserve patients' rights and respect population diversity. |
| 2.1.3 | 2.1.3.1 | Establish and maintain appropriate professional boundaries and accept responsibility and accountability within healthcare team. |
| 2.1.4 | 2.1.4.1 | Adopt the fact that the practice of pharmacy is ethically consistent with good business, and quality of care precedes generating profit. |
| 2.3.2 | 2.3.2.1 | Choose best practices and adhere to high ethical, legal and safety standards for management of biological and pharmaceutical materials/products. |

Domain 3: Pharmaceutical Care

| Program K. element no. | Course K. element no. | Course K. element |
|------------------------|-----------------------|--|
| 3.2.5 | 3.2.5.1 | Provide education and counseling to patients, healthcare professionals and communities to achieve safe and cost-effective use of medicine. |



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3- Course Contents:

| Week No. | Topics | Lecture credit Hours |
|----------|---|----------------------|
| 1 | The general principles and history of pharmacy ethics | 1 |
| 2 | The general principles and history of pharmacy ethics | 1 |
| 3 | The general principles of medical ethics | 1 |
| 4 | The general principles of medical ethics | 1 |
| 5 | The conflicts of interests and its management pharmacists' relationship with society and family | 1 |
| 6 | The conflicts of interests and its management pharmacists' relationship with society and family | 1 |
| 7 | The conflicts of interests and its management pharmacists' relationship with society and family | 1 |
| 8 | The ethics in disaster | 1 |
| 9 | The medication error | 1 |
| 10 | Research ethics | 1 |
| 11 | Research ethics | 1 |
| 12 | Animal ethics (part 1) | 1 |
| 13 | Animal ethics (part 2) | 1 |
| 14 | Animal ethics (part 3) (self learning) | 1 |



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|----|--------------------------------------|---|
| 15 | Compensatory and alternative lecture | 1 |
| 16 | Revision and quiz | 1 |
| 17 | Final written and oral exam | - |

4- Teaching and learning Methods:

| Teaching and Learning Method | | Week number | K. elements to be addressed |
|------------------------------|---|-------------|---|
| 4.1 | Advanced lectures: <ul style="list-style-type: none"> Lectures using Data show, power Point presentations Brain storming Group discussion | 1-16 | 1.1.5.1, 2.1.1.1, 2.1.2.1, 2.1.3.1, 2.1.4.1, 2.3.2.1, 3.2.5.1 |
| 4.2 | Hybrid learning <ul style="list-style-type: none"> Online learning through my Mans "Mansoura university " Interactive discussion through My Mans | 6, 10 | 1.1.5.1, 2.1.1.1, 2.1.2.1, 2.1.3.1, 2.1.4.1, 2.3.2.1, 3.2.5.1 |
| 4.3 | Self-learning | 14 | 2.3.2.1, 3.2.5.1 |
| 5.6 | Collaborative learning: research project | 11-14 | 1.1.5.1, 2.1.1.1, 2.1.2.1, 2.1.3.1, 2.1.4.1, 2.3.2.1, 3.2.5.1 |

5- Student Assessment:

a- Assessment Methods:

| Assessment Methods | K elements to be assessed |
|---|---|
| 1- Written exam | 1.1.5.1, 2.1.1.1, 2.1.2.1, 2.1.3.1, 2.1.4.1, 2.3.2.1, 3.2.5.1 |
| 4- Periodical (Mid-term exam) / Course work | 1.1.5.1, 2.1.1.1, 2.1.2.1, 2.1.3.1, 2.1.4.1, 2.3.2.1, 3.2.5.1 |

b. Assessment schedule

| | | |
|--------------|--|--|
| Assessment 1 | Periodical (Mid-term exam) / Course work | 7 th – 9 th week |
| Assessment 3 | Written exam | Starting from 17 th week |
| Assessment 4 | Oral exam | Starting from 17 th week |

c. Weighing of assessments

| | | |
|---|--|-----|
| 1 | Periodical (Mid-term) exam / Course work | 25% |
|---|--|-----|



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|-------|--------------------------------|------|
| 2 | Final-term written examination | 70% |
| Total | | 100% |

6- Facilities required for teaching and learning

| | |
|-------------|---------------------------------|
| -Class room | Data show- Computers, Internet. |
|-------------|---------------------------------|

7- List of References

| No | Reference | Type |
|----|--|--------------------|
| 1. | Electronic book prepared by staff members | Course notes |
| 2. | Recorded videos prepared by staff members | Videos on platform |
| 3. | Ethical Rationalism Applied to Pharmaceuticals, 2020, Pharmaceutical Ethics, https://doi.org/10.1002/0470855827.ch3 | Books |



8- Matrix of course content versus course k. elements:

| Course contents / K. elements | Domain 1 | Domain 2 | | | | | Domain 3 |
|---|----------|----------|---------|---------|---------|---------|----------|
| | 1.1.5.1 | 2.1.1.1 | 2.1.2.1 | 2.1.3.1 | 2.1.4.1 | 2.3.2.1 | 3.2.5.1 |
| The general principles and history of pharmacy ethics | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| The general principles and history of pharmacy ethics | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| The general principles of medical ethics | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| The general principles of medical ethics | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| The conflicts of interests and its management pharmacists' relationship with society and family | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| The conflicts of interests and its management pharmacists' relationship with society and family | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| The conflicts of interests and its management pharmacists' relationship with society and family | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| The ethics in disaster | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |



| | | | | | | | |
|--|---|---|---|---|---|---|---|
| The medication error | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Research ethics | | | | | | ✓ | ✓ |
| Research ethics | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Animal ethics (part 1) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Animal ethics (part 2) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Animal ethics (part 3) (self learning) | | | | | | | |


9- Matrix between course contents, methods of learning and assessment

| A) Theoretical Part: | | | | | | | | |
|--|----------------------------|-----------------|---------------|------------------------|---------------------------|--------------------|---------|------|
| Course Contents | Methods of learning | | | | Assessment methods | | | |
| | Advanced Lecture | Hybrid learning | Self-learning | Collaborative learning | Course Work | Practical/Tutorial | Written | Oral |
| The general principles and history of pharmacy ethics | ✓ | | | | ✓ | | ✓ | |
| The general principles and history of pharmacy ethics | ✓ | | | | ✓ | | ✓ | |
| The general principles of medical ethics | ✓ | | | | ✓ | | ✓ | |
| The general principles of medical ethics | ✓ | | | | ✓ | | ✓ | |
| The conflicts of interests and its management pharmacists' relationship with society and family | ✓ | | | | | | ✓ | |
| The conflicts of interests and its management pharmacists' relationship with society and family | ✓ | ✓ | | | | | ✓ | |



Mansoura University
Faculty of Pharmacy
Quality Assurance Unit
Course Specification
Pharm D Program
2023- 2024



| | | | | | | | | | |
|--|---|---|---|---|--|--|--|---|--|
| The conflicts of interests and its management pharmacists' relationship with society and family | √ | | | | | | | √ | |
| The ethics in disaster | √ | | | | | | | √ | |
| The medication error | √ | | | | | | | √ | |
| Research ethics | √ | √ | √ | | | | | √ | |
| Research ethics | √ | | | √ | | | | √ | |
| Animal ethics (part 1) | √ | | | √ | | | | √ | |
| Animal ethics (part 2) | √ | | | √ | | | | √ | |
| Animal ethics (part 3) (self learning) | √ | | | √ | | | | √ | |
| Course Coordinator | Prof. Dr. Mohammed S. El-Awady | | | | | | | | |
| Head of Department | Prof Dr Manar A Nader  | | | | | | | | |

Date:18 /9 / 2023