<table>
<tr><td>Course Title</td><td colspan="5">Systematic Pharmacology I</td></tr>
<tr><td>Course Code</td><td colspan="5">MED-308</td></tr>
<tr><td>Course Type</td><td colspan="5">Required</td></tr>
<tr><td>Level</td><td colspan="5">Undergraduate</td></tr>
<tr><td>Year / Semester</td><td colspan="5">Year 3/ Semester 6 (Spring)</td></tr>
<tr><td>Teacher’s Name</td><td colspan="5">Course Lead:
Dr Persoulla Nicolaou
Contributors:
Dr Katherine Annabel Alexander
Prof George Samoutis</td></tr>
<tr><td>ECTS</td><td>6</td><td>Lectures / week</td><td>4</td><td>Laboratories / week</td><td>0</td></tr>
<tr><td>Course Purpose and Objectives</td><td colspan="5">The main objective of the course is to describe the pharmacological principles governing management of common disorders affecting the cardiovascular, endocrine, musculoskeletal, and reproductive systems and the skin.
In general, for each condition studied students should be able to list the main drugs, or classes of drugs, that relieve symptoms, produce a cure or improve prognosis and/or reduce risk of recurrence.
For each drug type, students should be able to describe which patients may benefit from its use, its clinical indications, its mechanism of action and the most common or serious side effects.</td></tr>
<tr><td>Learning Outcomes</td><td colspan="5">The following list provides the learning objectives that will be covered in the lectures and tutorials of each week:

Week 1
Lobs covered during lectures and tutorials:
1. Describe the rationale for pharmacological treatment of hypertension and place in therapy of different anti-hypertensive medication.
2. Describe the clinical indications, mechanism of action and adverse effects of drugs targeting the renin-angiotensin-aldosterone system and calcium channel blockers.
3. Describe the clinical indications, mechanism of action and adverse effects of the different types of diuretics.</td></tr>
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4. Explain the pharmacological rationale, adverse effects and place in therapy of hydralazine, β-blockers, α-blockers, centrally-acting drugs and potassium channel activators in the treatment of hypertension.
5. Describe the place in therapy, mechanism of action and adverse effects of drugs used to treat pulmonary arterial hypertension.

Week 2

Lobs covered during lectures and tutorials:

6. Outline the pathophysiology of heart failure and describe the pharmacological basis for its treatment.
7. Describe the mechanism of action, place in therapy and adverse effects of drugs used to treat heart failure.
8. Outline the different types of angina.
9. Describe the rationale and considerations for pharmacological treatment of angina.
10. Outline the process of atherogenesis.
11. Describe the mechanism of action, side effects and place in therapy of drug used.

Week 3

Lobs covered during lectures and tutorials:

12. Outline the phases and ion channels involved in the action potential in cardiac tissue.
13. Describe the indications, mechanism of action, and adverse effects of class I-IV anti-arrhythmic drugs.
14. Outline the pharmacology of other unclassified anti-arrhythmic drugs.

Week 4

Lobs covered during lectures and tutorials:

15. Describe the mechanism of action, adverse effects and clinical indications for anti-platelet and anti-coagulant drugs.
16. Describe the pharmacology of vitamin K and its analogues, including mechanism of action, adverse effects and clinical indications.
17. Describe the mechanism of action, adverse effects and clinical indications for anti-platelet and thrombolytic drugs.

Week 5

Lobs covered during lectures and tutorials:

18. Outline the regulation of gastric acid secretion.
19. Describe the clinical indications, place in therapy, mechanism of action and adverse effects of drugs used to reduce or neutralize gastric acid.

Week 6

Lobs covered during lectures and tutorials:

20. Explain why the liver is particularly susceptible to drug induced damage.
21. Describe how paracetamol overdose can lead to hepatotoxicity.
22. List drugs that may cause hepatotoxicity.
23. Outline the considerations for prescribing in hepatic impairment.
24. Outline the rationale for pharmacological treatment of chronic decompensated liver failure.
25. Outline the rationale for pharmacological treatment of chronic pancreatitis and cholestasis.
26. List drugs that may cause pancreatitis or cholestasis.
27. Outline the factors and mechanisms that may induce vomiting.
28. Describe the pharmacology of anti-emetic drugs, including clinical indications, mechanism of action and adverse effects.

Formative Midterm Exam

Week 7

Lobs covered during lectures and tutorials:

29. Describe the pharmacology of drugs that alter the motility of the GI tract, including their clinical indications, mechanism of action and adverse effects.
30. Describe the pharmacology of drugs used to treat inflammatory bowel disease, including their clinical indications, place in therapy, mechanism of action and adverse effects.

Week 8

Lobs covered during lectures and tutorials:

31. Revise the autonomic innervation of the respiratory system.
32. Outline the pathophysiology of asthma.
33. Describe the mechanism of action, adverse effects and place in therapy of β-2 agonists and methylxanthines in the treatment of asthma.

34. Describe the mechanism of action, adverse effects and place in therapy of leukotriene inhibitors, lipooxygenase inhibitors and anti-inflammatory drugs in the treatment of asthma.
35. Outline the pathophysiology of chronic obstructive pulmonary disease (COPD).
36. Describe the mechanism of action, adverse effects and place in therapy of drugs used to treat COPD.
37. Describe the clinical indications, mechanism of action and adverse effects of other drugs affecting the respiratory system, specifically anti-histamines, expectorants, mucolytics, cough suppressants and decongestants.
38. Outline how bleomycin, amiodarone, oxygen, tobacco and cocaine may adversely affect the respiratory system.

Week 9

Lobs covered during lectures and tutorials:

39. Review the role of insulin, glucagon and incretins in control of blood glucose.
40. Outline the mechanisms resulting in hyperglycaemia in diabetes mellitus.
41. Describe the mechanism of action, adverse effects and place in therapy of drugs used in the treatment of diabetes mellitus.
42. Outline the regulation of food intake and energy expenditure.
43. List drugs that may cause weight changes as a side effect.
44. Describe pharmacological interventions used to treat obesity and the challenges of developing effective drugs.

Week 10

Lobs covered during lectures and tutorials:

45. Describe the pharmacology of drugs used to treat hyperthyroidism and hypothyroidism including clinical indications, place in therapy, mechanism of action and adverse effects.
46. List drugs that may alter thyroid function as a side effect.
47. Describe the pharmacology of drugs affecting growth hormone (GH) secretion and action, including clinical indications, place in therapy, mechanism of action and adverse effects.
48. Describe the pharmacology of drugs affecting prolactin secretion, including clinical indications, place in therapy, mechanism of action and adverse effects.

49. Describe the effects of drugs on vasopressin action, including mechanism of action, adverse effects and clinical indications.
50. Describe the effects of drugs on the hypothalamic-pituitary-adrenal axis, including mechanism of action, adverse effects and clinical indications.

Week 11

Lobs covered during lectures and tutorials:

51. Outline the hormonal control of the menstrual cycle.
52. Describe the mechanism of action, route of administration and adverse effects of contraceptives.
53. Outline special considerations when choosing a contraceptive.
54. List the drugs used in postmenopausal hormone replacement.
55. Describe the benefits and drawbacks of hormone replacement therapy.
56. Describe the pharmacology of androgen and anti-androgen drugs, including mechanism of action, clinical uses and adverse effects.

Week 12

Lobs covered during lectures and tutorials:

57. Describe the pharmacology of drugs used to treat female infertility, including their mechanism of action, adverse effects and clinical indications.
58. Outline the rationale for pharmacological treatment used to increase testosterone levels and spermatogenesis in male infertility.
59. Describe the pharmacology of drugs used to treat erectile dysfunction, including their mechanism of action, adverse effects and clinical indications.
60. List drugs that may cause priapism.
61. Describe the principles of selecting medicines during pregnancy.
62. List drugs that should be avoided in pregnancy and explain their adverse effects during pregnancy.
63. Describe the pharmacology of drugs used for labour induction and postpartum haemorrhage, including mechanism of action, clinical indications and adverse effects.
64. Describe the pharmacology of tocolytic drugs, including mechanism of action, clinical indications and adverse effects.
65. Describe the pharmacology of abortifacients, including mechanism of action, clinical indications and adverse effects.
66. Describe the principles of selecting medicines during breastfeeding.

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<tr><td></td><td colspan="3">67. List drugs that should be avoided in breastfeeding and explain their adverse effects.
68. List adverse effects of drugs on the reproductive system.</td></tr>
<tr><td>Prerequisites</td><td>MED-303 Pharmacology</td><td>Required</td><td>None</td></tr>
<tr><td>Course Content</td><td colspan="3"><u>Topics covered in lectures:</u>
Drugs used on specific body systems or against specific conditions:
Cardiovascular pharmacology
• Hypertension
• Pulmonary arterial hypertension
• Hypotension
• Heart failure
• Anti-arrhythmic drugs
• Angina
• Anti-hyperlipidaemics
• Anti-coagulant, anti-platelet and thrombolytic drugs

Respiratory pharmacology
• Asthma
• COPD
• Other drugs targeting the respiratory system

Gastrointestinal drugs
• Peptic ulcer
• GORD
• Anti-emetics
• Motility
• Inflammatory bowel disease
• Cholestasis
• Pancreatitis
• Hepatic failure
• Fluids & Electrolytes

Endocrine Pharmacology
• Diabetes mellitus
• Obesity</td></tr>
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Drugs affecting somatotropic, pituitary, hypothalamic and adrenal cortex hormones
Drugs affecting thyroid function

Reproductive pharmacology

Contraceptives
Hormone-replacement therapy
Infertility
Erectile dysfunction and pregnancy
Labour, abortifacients and breastfeeding

Complementary and alternative medicine

<u>Topics covered in tutorials:</u>
Case studies/practice questions.
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<tr><td>Teaching Methodology</td><td>Lectures, Tutorials.</td></tr>
<tr><td>Bibliography</td><td>
Required Textbooks/Reading:
<table>
<tr><th>Authors</th><th>Title</th><th>Publisher</th><th>Year</th><th>ISBN</th></tr>
<tr><td>Rang, H. P</td><td>Rang and Dale's pharmacology</td><td>Elsevier (9th edition)</td><td>2019</td><td>9780702074486</td></tr>
<tr><td colspan="5">OR</td></tr>
<tr><td>Bertram Katzung and Anthony Trevor</td><td>Basic and Clinical Pharmacology</td><td>McGraw-Hill Education (15th edition)</td><td>2021</td><td>9781260452310</td></tr>
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Recommended Textbooks/Reading:
<table>
<tr><th>Authors</th><th>Title</th><th>Publisher</th><th>Year</th><th>ISBN</th></tr>
<tr><td>Kaplan</td><td>USMLE Step 1 Lecture Notes 2022: Pharmacology</td><td>Kaplan</td><td>2022</td><td>9781506272962 (for set of all topics)</td></tr>
<tr><td>Karen Whalen</td><td>Lippincott Illustrated Reviews: Pharmacology</td><td>Lippincott Williams and Wilkins (7th edition)</td><td>2018</td><td>9781496384133</td></tr>
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	Zachary Crees,	The Washington manual of medical therapeutics	Wolters Kluwer (36th edition)	2019	9781975113513
	E-book Permalink http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,sso&db=e000xww&AN=2536698&site=eds-live&custid=s1098328				
	Goodman & Gilman	Goodman & Gilman's The Pharmacological Basis of Therapeutics	McGraw Hill (13th edition)	2017	9781259584732
	Arthur J Atkinson, Jr, Shiew-Meu Huang, Juan JL Lertora, Sanford P Markey,	Principles of clinical Pharmacology	Academic Press (3rd edition)	2012	9780123854711
	E-book Permalink http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,sso&db=nlebk&AN=477513&site=eds-live&custid=s1098328				
	Rosenfeld Gary C	BRS Pharmacology	Wolters Kluwer Health (7th edition)	2019	9781975105495
Assessment	Formative Midterm Exam and Summative Final Exam. The Summative Final Exam will contribute towards 100% of the course grade. Assessment is by Single Best Answer MCQs (SBAs) and there may also be some Short Answer Questions (SAQs).				
Language	English				