DEREE COLLEGE SYLLABUS FOR: BMS 4435 PHARMACOLOGY IN HEALTH AND DISEASE	
(Updated Fall 2022) **UK LEVEL: 6** **UK CREDITS: 15** **US CREDITS: 3/0/3**	
PREREQUISITES:	BI 1000 Introduction to Biology I BI 1101 Introduction to Biology II BI 3235 Cell and Molecular Biology BI 3240 Human Anatomy and Physiology
CATALOG DESCRIPTION:	An integrated exploration of pharmacology in health and disease. Focuses on, principles of pharmacology, including receptor mechanisms, drug distribution and metabolism, and pharmacokinetics in addition to drug discovery, safety and efficacy. The existing and experimental treatment strategies in pharmacology both in health and disease are discussed. Specific cases, research and bioethics questions are explored in a critical and analytical approach.
RATIONALE:	Pharmacology, the science of drugs, is a subject that is becoming increasingly important in clinical practice. Concept questions prompt recall of basic facts, while cases, research questions, and bioethics questions challenge the student to apply key concepts to very real situations. Knowledge in pharmacology is an in-depth approach to understanding drug mechanisms of most human diseases their chemical and physical properties, their actions on living tissues and systems, and their effects on health and disease. It helps students integrate molecular, cellular, physiologic and pathologic processes contributing to diseases. Furthermore, students will be helped to develop a critical and analytical approach to explaining specific case histories, explain the interaction of environmental and stress factors on the pathogenesis of human diseases but also develop a critical and analytical approach to explaining specific case histories. Biomedical sciences students will be in the position to discuss drug discovery, safety and efficacy plus the existing and experimental treatment strategies in pharmacology both in health and disease.
LEARNING OUTCOMES:	As a result of taking the course students should be able to: 1. Identify the fundamental principles of pharmacokinetics, pharmacodynamics and drug development. 2. Compare and contrast the specific pharmacology of the major classes of drugs, the risks and benefits, in relation to the organ systems they affect, and the diseases for which they are used therapeutically. 3. Critically evaluate the use of clinical findings, imaging techniques, tests of physiological function and laboratory data in the identification, aetiology, diagnosis and pathogenesis of disease. 4. Demonstrate a critical and analytical approach to specific case histories of human disease. 5. Discuss the mechanisms and life implications associated with a range of diseases in relation to various drug treatments and the consequences (risk-benefit ratio) of selected disease states. 6. Conduct appropriate literature-based research/evaluation of relevant topics.
METHOD OF TEACHING AND LEARNING:	In congruence with the learning and teaching strategy of the college, the following tools are used: ➢ Class lectures, interactive learning (class discussions, group work) video presentations, and practical problems solved in class. ➢ Exercises and primary source documents are assigned as homework, the solutions of which are reviewed in class ➢ Master lectures by retired professors and other experts in the field. ➢ Lectures on the principles and understanding of the subject matter, including original data from primary research papers and other sources. ➢ Tutorials of an interactive format to establish understanding of topic areas primarily through case studies and experimentally derived data.

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Office hours: students are encouraged to make full use of the office hours of their instructor, where they can ask questions, see their exam paper, and/or go over lecture/lab material.
Use of a blackboard site, where instructors post lecture notes, assignment instructions, timely announcements, as well as additional resources.

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<tr><td>ASSESSMENT:</td><td>
Summative:
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<tr><td>First Assessment
In-class midterm examination (2-hour) 40%
Multiple choice, problems, essays, combination</td><td>40</td></tr>
<tr><td>Second Assessment
Final examination, Case Study (2-hour), comprehensive 50%
Final Exam/Case study Analysis</td><td>50</td></tr>
<tr><td>Third assessment
Portfolio

Essay questions aiming to prepare students for their first and second assessments in terms of content, context and time management</td><td>10</td></tr>
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Formative:
Multiple “diagnostic on-line" tests 0
Multiple choice, short answers, essays

The formative MC (on-line) and written essays aim to prepare students for the examination. Students are expected to submit feedback on their performance.
The 1st summative assessment tests Learning Outcomes 1, 2
The final examination tests all learning outcomes and it is comprehensive.

The final grade for this module will be determined by averaging all summative assessment grades, based on the predetermined weights for each assessment. If students pass the comprehensive assessment that tests all Learning Outcomes for this module and the average grade for the module is 40 or higher, students are not required to resit any failed assessments.
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<tr><td>INDICATIVE READING:</td><td>
REQUIRED READING:
Pharmacology (Lippincott Illustrated Reviews Series) Seventh, North American Edition by Karen Whalen PharmD BCPS (Author)

RECOMMENDED READING: N/A
Bertram G. Katzung, Basic & Clinical Pharmacology, 14e, McGraw Hills, latest edition.
ISBN-13: 978-1259641152
ISBN-10: 1259641155
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<tr><td>INDICATIVE MATERIAL:
(e.g. audiovisual, digital material, etc.)</td><td>
REQUIRED MATERIAL: N/A

RECOMMENDED MATERIAL: N/A
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<tr><td>COMMUNICATION REQUIREMENTS:</td><td>N/A</td></tr>
<tr><td>SOFTWARE REQUIREMENTS:</td><td>Microsoft Word, Microsoft PowerPoint, Blackboard CMS</td></tr>
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BMS 4435

WWW RESOURCES:	https://www.pharmacology2000.com/ https://www.scitechnol.com/scholarly/pharmacology-of-diseases-journals-articles-ppts-list.php http://www.dnalc.org https://www.jove.com/visualize

BMS 4435

	https://biologicalproceduresonline.biomedcentral.com/ https://www.bitnos.com/biomedical-protocols https://www.ncbi.nlm.nih.gov/pubmed/ https://www.informaticseducation.org/ http://imia-medinfo.org/wp/welcome-to-imia-2/ http://genomicsandhealth.org https://www.humanbrainproject.eu/en/ http://www.braininitiative.org/ https://www.alleninstitute.org/ http://www.brain-map.org/
INDICATIVE CONTENT (LEC):	BASIC PRINCIPLES The Nature of Drugs & Drug Development & Regulation Drug Receptors & Pharmacodynamics Pharmacokinetics & Pharmacodynamics: Rational Dosing & the Time Course of Drug Action Drug Biotransformation Pharmacogenomics AUTONOMIC DRUGS Introduction to Autonomic Pharmacology Cholinoceptor-Activating & Cholinesterase-Inhibiting Drugs Cholinoceptor-Blocking Drugs Adrenoceptor Agonists & Sympathomimetic Drugs Adrenoceptor Antagonist Drugs CARDIOVASCULAR-RENAL DRUGS Antihypertensive Agents Vasodilators & the Treatment of Angina Pectoris Drugs Used in Heart Failure Agents Used in Cardiac Arrhythmias Diuretic Agents DRUGS WITH IMPORTANT ACTIONS ON SMOOTH MUSCLE Histamine, Serotonin, & the Ergot Alkaloids Vasoactive Peptides The Eicosanoids: Prostaglandins, Thromboxanes, Leukotrienes, & Related Compounds Nitric Oxide Drugs Used in Asthma DRUGS THAT ACT IN THE CENTRAL NERVOUS SYSTEM Introduction to the Pharmacology of CNS Drugs Sedative-Hypnotic Drugs The Alcohols Antiseizure Drugs General Anesthetics Local Anesthetics Skeletal Muscle Relaxants Pharmacologic Management of Parkinsonism & Other Movement Disorders Antipsychotic Agents & Lithium Antidepressant Agents Opioid Agonists & Antagonists Drugs of Abuse DRUGS USED TO TREAT DISEASES OF THE BLOOD, INFLAMMATION, & GOUT Agents Used in Cytopenias; Hematopoietic Growth Factors Drugs Used in Disorders of Coagulation Agents Used in Dyslipidemia Nonsteroidal Anti-Inflammatory Drugs, Disease-Modifying Antirheumatic Drugs, Nonopioid Analgesics, & Drugs Used in Gout

BMS 4435

	SECTION VII: ENDOCRINE DRUGS Hypothalamic & Pituitary Hormones Thyroid & Antithyroid Drugs Adrenocorticosteroids & Adrenocortical Antagonists The Gonadal Hormones & Inhibitors Pancreatic Hormones & Antidiabetic Drugs Agents That Affect Bone Mineral Homeostasis CHEMOTHERAPEUTIC DRUGS Chemotherapeutic Drugs: Introduction Beta-Lactam & Other Cell Wall- & Membrane-Active Antibiotics Tetracyclines, Macrolides, Clindamycin, Chloramphenicol, Streptogramins, & Oxazolidinones Aminoglycosides & Spectinomycin Sulfonamides, Trimethoprim, & Quinolones Antimycobacterial Drugs Antifungal Agents Antiviral Agents Miscellaneous Antimicrobial Agents; Disinfectants, Antiseptics, & Sterilants Clinical Use of Antimicrobial Agents Antiprotozoal Drugs Clinical Pharmacology of the Antihelminthic Drugs Cancer Chemotherapy Immunopharmacology TOXICOLOGY Introduction to Toxicology: Occupational & Environmental Heavy Metal Intoxication & Chelators Management of the Poisoned Patient SPECIAL TOPICS Special Aspects of Perinatal & Pediatric Pharmacology Special Aspects of Geriatric Pharmacology Dermatologic Pharmacology Drugs Used in the Treatment of Gastrointestinal Diseases Therapeutic & Toxic Potential of Over-the-Counter Agents Dietary Supplements & Herbal Medications Rational Prescribing & Prescription Writing Important Drug Interactions & Their Mechanisms Vaccines, Immune Globulins, & Other Complex Biologic Products