DEREE COLLEGE SYLLABUS FOR: BMS 4635 PHARMACOLOGY IN HEALTH AND DISEASE 3/0/3	
UK LEVEL: 6 **UK CREDITS: 15** (Previously: BMS 4435 PHARMACOLOGY IN HEALTH AND DISEASE) (Updated: Fall 2024)	
PREREQUISITES:	BI 1000 Introduction to Biology I BI 1101 Introduction to Biology II BI 2222 Cell Biology **or** BI 3233 Molecular Biology of the Cell BI 3336 Molecular Biology **or** BI 3233 Molecular Biology of the Cell BI 3204 Human Genetics BI 3240 Human Anatomy and Physiology
CATALOG DESCRIPTION:	An integrated exploration of pharmacology principles and their application in the context of health and disease. Focuses on fundamental concepts of drug action, drug interactions, the effects of drugs on physiological systems, in addition to drug discovery, safety and efficacy. Additionally, the course will cover various drug classes and their therapeutic applications, as well as the impact of pharmacological interventions on disease management. Specific cases, research and bioethics questions are explored using critical and analytical approaches.
RATIONALE:	Pharmacology, the science of drugs, plays a crucial role in healthcare and biomedical sciences with respect to interdisciplinary collaboration, disease management, safe and effective drug use, personalized medicine, patient safety, and drug discovery and development. 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. 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 this course, the student 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 teaching and learning strategy of the college, the following tools are used: • Class lectures, interactive learning (class discussions, group work) video

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<tr><td></td><td>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 esteemed 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.
• 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 material.
• Use of library facilities for further study and preparation for the exams.
• Use of the Blackboard course management platform to further support communication, by posting lecture notes, assignment instruction, timely announcements, formative quizzes and online submission of assignments.</td></tr>
<tr><td>ASSESSMENT:</td><td>Summative:
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<tr><td>1st assessment: In-class midterm examination (2-hour)
Multiple choice, problems, essays, combination</td><td>40%</td></tr>
<tr><td>2nd assessment:
Portfolio (throughout semester)
Essay questions aiming to prepare students for their first and final assessments in terms of content, context and time management; in-class presentations and participation</td><td>10%</td></tr>
<tr><td>Final assessment: Final examination, multiple-choice, concept questions and case study questions (2-hour), comprehensive</td><td>50%</td></tr>
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Formative:
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<tr><td>Multiple “diagnostic on-line" tests
Multiple choice, short answers, essays</td><td>0%</td></tr>
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The formative multiple-choice tests and written essays aim to prepare students for the examinations. Students are expected to submit feedback on their performance.

The 1st summative assessment tests Learning Outcomes 1, 2.
The 2nd assessment tests Learning Outcomes 1-6.
The final examination tests all Learning Outcomes (1-6) 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.</td></tr>
<tr><td>INDICATIVE READING:</td><td>REQUIRED READING:
1. Karen Whalen PharmD, BCPS, Lippincott Illustrated Reviews: Pharmacology, latest edition, Wolters Kluwer, ISBN/ISSN: 97819751705542.</td></tr>
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	2. Instructor's lecture notes on blackboard. **RECOMMENDED READING:** Katzung's Basic & Clinical Pharmacology, latest edition, McGraw Hill Author: Todd W. Vanderah; 1260463303 · 9781260463309 Other sources, including journal and newspapers' articles, research papers etc. recommended by the instructor throughout the semester.
INDICATIVE MATERIAL: *(e.g. audiovisual, digital material, etc.)*	**REQUIRED MATERIAL:** N/A **RECOMMENDED MATERIAL:** N/A
COMMUNICATION REQUIREMENTS:	Verbal and written skills using academic / professional English
SOFTWARE REQUIREMENTS:	MS Office and Blackboard CMS
WWW RESOURCES:	https://www.guidetopharmacology.org https://pharmacologycorner.com https://cvpharmacology.com https://www.pharmacology2000.com/ https://www.scitechnol.com/scholarly/pharmacology-of-diseases-journalsarticles-ppts-list.php http://www.dnalc.org https://www.jove.com/visualize 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:	PRINCIPLES OF DRUG THERAPY • The Nature of Drugs • Drug Development & Regulation • Drug-Receptor Interactions & Pharmacodynamics • Pharmacokinetics • Rational Dosing & the Time Course of Drug Action • Drug Biotransformation • Pharmacogenomics AUTONOMIC DRUGS CARDIOVASCULAR-RENAL DRUGS DRUGS WITH IMPORTANT ACTIONS ON SMOOTH MUSCLE CENTRAL NERVOUS SYSTEM DRUGS

	DRUGS USED TO TREAT DISEASES OF THE BLOOD, INFLAMMATION, & GOUT ENDOCRINE DRUGS TOXICOLOGY SPECIAL TOPICS • Special Aspects of Perinatal & Pediatric Pharmacology • Special Aspects of Geriatric Pharmacology • Dermatologic Pharmacology • Drugs for Urologic Disorders • Gastrointestinal & Antiemetic drugs • Obesity Drugs • Therapeutic & Toxic Potential of Over-the-Counter Agents • Dietary Supplements, Herbal Medications & Nutraceuticals • Rational Prescribing & Prescription Writing • Important Drug Interactions & Their Mechanisms • Vaccines, Immune Globulins, & Other Complex Biologic Products