

DEREE COLLEGE SYLLABUS FOR: BMS 4645 RESEARCH METHODS AND ICT TOOLS IN BIOMEDICAL SCIENCES 3/0/3**UK LEVEL: 6**
UK CREDITS: 15(Previously: BMS 4545 RESEARCH METHODS AND ICT TOOLS IN BIOMEDICAL SCIENCES)
(Updated: Fall 2024)**PREREQUISITES:**BI 1000 Introduction to Biology I
BI 1101 Introduction to Biology II
BI 2222 Cell Biology
BI 3336 Molecular Biology
BI 3240 Human Anatomy and Physiology
MA 2021 Applied Statistics for Sciences**CATALOG DESCRIPTION:**

The course provides a guide to the key practical and broader skills needed in biomedical sciences, including comprehensive coverage of: study and examination skills; fundamental laboratory and analytical skills; investigative techniques and evaluation skills; analysis and presentation of data. The capstone proposal is also prepared in this course.

RATIONALE:

This course aims to cover basic methods and techniques and provides students with the key points highlighting theoretical background to methods, to enhance understanding, and the most important features of methodology. The course provides effective explanation and support for the development of a wide range of laboratory and data analysis skills that students will use repeatedly during the practical aspects of their studies. The knowledge and practical skills presented in this course will help students progress to their capstone course. The course also discusses data analysis and presentation, as well as how research results are communicated, thus introducing students to the basics of scientific research.

LEARNING OUTCOMES:

As a result of taking this course, the student should be able to:

1. Discuss selected scientific methods and techniques related to biomedical sciences
2. Identify moral and ethical issues of scientific research and apply professional codes of conduct to their biomedical research.
3. Demonstrate ability in recording, processing, interpreting and presenting data, using appropriate methods and techniques.
4. Analyze a biomedical research topic based on natural science methodology.
5. Create a capstone proposal and plan the project with minimum guidance within agreed guidelines.

METHOD OF TEACHING AND LEARNING:

In congruence with the teaching and learning strategy of the college, the following tools are used:

- Lectures and class discussions.
- Homework assignments.
- Office hours held by the instructor to provide further assistance to students.
- 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.

ASSESSMENT:**Summative:**

	<table border="1" data-bbox="547 147 1347 360"> <tr> <td>1st assessment: Project on a specific topic/paper leading to an oral presentation</td> <td>20%</td> </tr> <tr> <td>2nd assessment: Student's capstone proposal (written report of 2,000 - 3,000 words)</td> <td>30%</td> </tr> <tr> <td>Final assessment: Final exam (2h) with MC, short answer and/or short essay questions.</td> <td>50%</td> </tr> </table> <p>Formative:</p> <table border="1" data-bbox="547 434 1347 501"> <tr> <td>Selected practical exercises and short practice projects</td> <td>0</td> </tr> </table> <p>The formative exercises aim to prepare students for the summative assessments. The first assessment tests Learning Outcomes 1-4. The second assessment tests Learning Outcome 4-5. The final assessment tests Learning Outcomes 1-4.</p>	1 st assessment: Project on a specific topic/paper leading to an oral presentation	20%	2 nd assessment: Student's capstone proposal (written report of 2,000 - 3,000 words)	30%	Final assessment: Final exam (2h) with MC, short answer and/or short essay questions.	50%	Selected practical exercises and short practice projects	0
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Selected practical exercises and short practice projects	0								
INDICATIVE READING:	<p>REQUIRED READING: Required Textbook: Rob Reed, David Holmes, Jonathan Weyers, & Allan Jones, Practical Skills in Biomolecular Science, latest edition, Pearson</p> <p>https://pearson.com.au/products/Reed-Weyers-Jones/Reed-Rob-et-al/Practical-Skills-in-Biomolecular-Science/9781292100739?R=9781292100739</p> <p>RECOMMENDED READING: Other sources, including journal articles, research/review papers and textbook chapters recommended by the instructor throughout the semester.</p>								
INDICATIVE MATERIAL: (e.g. audiovisual, digital material, etc.)	<p>REQUIRED MATERIAL: N/A</p> <p>RECOMMENDED MATERIAL: N/A</p>								
COMMUNICATION REQUIREMENTS:	Verbal and written skills using academic / professional English								
WWW RESOURCES:	<p>https://www.ncbi.nlm.nih.gov/</p> <p>https://www.informaticseducation.org/</p> <p>The International Medical Informatics Association (IMIA) http://imia-medinfo.org/wp/welcome-to-imia-2/</p> <p>The Global Alliance for Genomics and Health (GA4GH) http://genomicsandhealth.org</p>								
INDICATIVE CONTENT:	<ul style="list-style-type: none"> • Study and examination skills • Scientific reading and writing skills • Information technology and learning resources • Communicating information • Fundamental laboratory techniques • The investigative approach 								

	<ul style="list-style-type: none">• Working with cells and tissues• Analytical techniques• Assaying biomolecules and studying metabolism• Genetic techniques• Analysis and presentation of data• Development of the capstone proposal
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