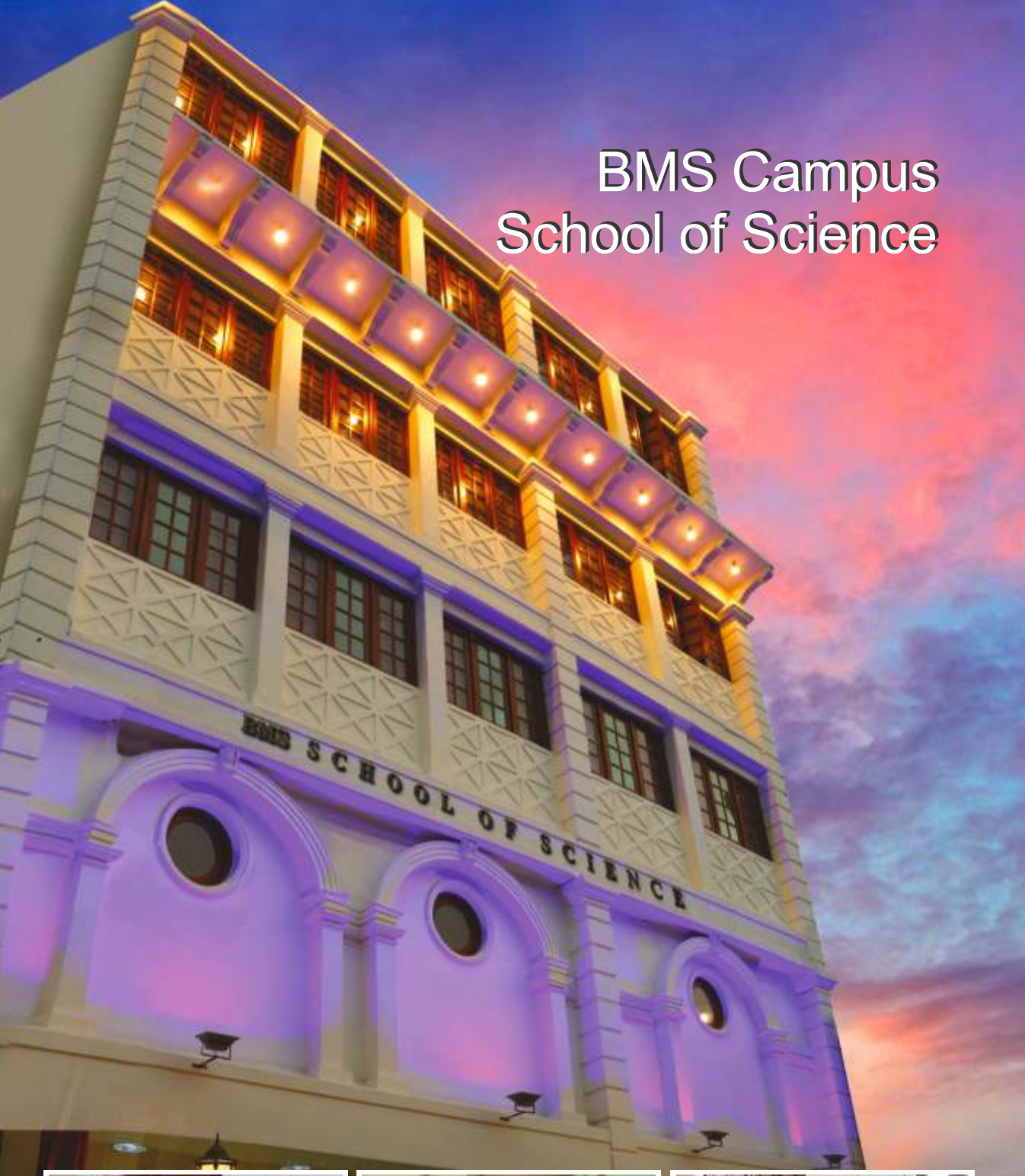
Teesside University

BMS CAMPUS
make learning happen

MSc Cancer and Molecular Diagnostics

British internal Masters Degree in Sri Lanka

BMS Campus
School of Science



Teesside University, UK

Teesside University, UK, delivers an outstanding student and learning experience underpinned by research, enterprise and the professions. Innovation, authenticity and enterprise are embedded within course content.The majority of the research was judged to be world-leading or internationally excellent. Teesside has been awarded an overall gold rating in the Teaching Excellence Framework.

The National Horizons Centre (NHC) is Teesside University's centre of excellence for the biosciences and healthcare sector. Together with its partners, the university prides itself on discovering diseases earlier, developing novel treatments and delivering life-saving medicines quicker, safer and more affordably. With specialisms in disease-specific research, biomanufacturing and biotechnology.

Dhino Dhilthesh at Teesside

AMBITION DELIVERED TODAY

At Teesside University we believe that innovation powers our steps to create a world where everyone benefits from progress.

BMS Campus Laboratory

Programme Objectives

MSc Cancer and Molecular Diagnostics, an internal Masters Degree, awarded by Teesside University, UK, has been designed as a specialised and advanced research focused Degree to solve global challenges facing humanity. It provides the students with the skills to synthesize information from a wide variety of sources and develop their effective decision-making abilities in solving complex problems relating to cancer and molecular diagnostics. The Degree prepares graduates for a broad range of careers across industrial, commercial, governmental and environmental settings.

Programme Structure

Modules	Credits
Advanced Biological Aspects of Disease	20
Genomics and Bioinformatics	20
Analytical Techniques	20
Pathobiology of Cancer	20
Cancer Diagnostics and Therapeutics	20
Clinical Biochemistry and Diagnostics Techniques	20
Life Science Research Project	60

Modules

Advanced Biological Aspects of Disease

Students will investigate a range of innovative, forward-looking research into the physiological aspects of disease, diagnostic techniques, and the associated pioneering treatments that are currently being developed. Students will fully develop the essential transferable skills of research and critical thinking by regularly reading and evaluating the data in primary research articles by formative presentations and in-class debate. These employability skills will be indispensable in the students' career development and their progress to posts in research industry. The module will be delivered as a combination of keynote lectures and seminars providing an in-depth understanding of biological aspects of a variety of diseases and the critical analysis of scientific literature relating to this discipline.

Genomics and Bioinformatics

Students will explore genomics, epigenetic regulatory mechanisms, proteomics and bioinformatics. They will learn about the most recent technologies, next generation sequencing. CRISPR-Cas system and genome editing, genomic and bioinformatics analyses, genomic application for disease treatment and prevention (pharmacogenomics), personalised medicine as well as ethical challenges in this field. This module is delivered via a combination of interactive lecture and seminar sessions. The module is assessed by a literature review on the application of genomics and bioinformatics in a specific disease state (e.g. respiratory diseases and CVD).

Analytical Techniques

This module will focus on a range of analytical instrumentation used in bioscience research applications; emphasis will be placed upon chromatography, mass spectrometry and spectroscopy instrumentation. The importance of these practical instrumentation techniques to modern investigations including proteomics and metabolomics will be explored. The students will learn core laboratory skills for sample extraction, sample preparation, instrumentation methodology and how to interpret spectra. The students will develop essential data handling skills, including the use of a range of statistical programmes. The module will be delivered through lectures, practical sessions and seminars to support the critical analysis of scientific literature, data analysis and data interpretation relating to this discipline and problem solving.

Pathobiology of Cancer

The Pathobiology of Cancer module aims to explore the pathophysiological mechanisms underlying the hallmarks of cancer. Processes such as cancer angiogenesis, invasion and metastasis, as well as some of the mechanisms by which tumours escape immune destruction, are covered. The molecular processes and signalling events are important in communication between the cancer cells and the tumour and the immune microenvironment, and how these interactions contribute to cancer progression is discussed. The module introduces students to genetic and epigenetic alterations as causes of several malignancies. Clinical manifestations, as well as responses to therapy, are examined in relation to the pathophysiological basis behind the various types of cancer.

Cancer Diagnostics and Therapeutics

This module provides as a translational context of the cellular and molecular circuits of cancer, by exploring detection, diagnosis, and current treatments in personalised cancer medicine. It introduces current cutting-edge technologies in diagnostic methods and presents therapeutic approaches for haematological malignancies and solid tumours. The module critically discusses the influence and importance of biomarkers and explores traditional and novel cancer treatments, such as chemotherapy and immunotherapy. The introduction of cancer genomics and bioinformatics as well as pharmacogenomics is used to uncover mechanisms of cancer pathogenesis and aid diagnosis, further providing therapeutic strategies for effective personlised cancer treatments. The module is delivered through a combination of interactive lectures, seminars and practical sessions. The science and IT laboratory sessions will take the form of lab demonstration and data analysis

Clinical Biochemistry and Diagnostic Techniques

This module explores advanced topics in biochemistry with special focus on clinical applications and diagnostic techniques. This involves the study of clinical analysis of bodily fluids and other biological materials to aid in the diagnosis, therapy and monitoring of a variety of diseases. The students will acquire the knowledge necessary for understanding the essential concepts of clinical biochemistry and of the associated diagnostic techniques. This module will appeal to those interested in reaching an advanced level of systematic understanding, gaining state-of-the-art knowledge and developing critical awareness of recent advances and current problems associated with working in clinical biochemical laboratories. Moreover, it will provide in-depth insights into future developments and innovation in the practical aspects of health and healthcare science. The module will be delivered via lectures, laboratory sessions and seminars.

Life Science Research Project

The module provides students with the opportunity to undertake a major independent practical research project in their discipline where they will be fully integrated within a research team. Reflecting staff expertise, students will be able to pursue many discipline-related topics, including medical, industrial and environmental microbiology, molecular, cell and system biology, recombinant DNA technology, protein biochemistry, structural biology, fermentation, bioengineering and many other areas. They will complete a hypothesis-driven project utilising appropriate discipline-specific laboratory, database or computational research methodologies to interrogate a hypothesis in a specialised area of the life sciences. The students will be expected to work at a level recognised to be at the forefront of the discipline. The module will be delivered via a combination of seminars, supervisor meetings and specialist technique workshops. Key skills in research and knowledge creation will be developed through seminars and guided-independent study. The students will be required to demonstrate the capacity for comprehensive and objective analysis, and for developing innovative and constructive proposals for the solution to the project topic. The supervisors will provide guidance to support students, but a high degree of autonomy is required.

Programme Information

Teaching and Learning

Duration: **One Year**
Mode: **Full time**
Lectures: **Saturdays & Sundays**
Intakes: **May / January**

Entry requirements

A minimum of UK 2.2 Honours degree or equivalent GPA in a relevant topic, including biology, biochemistry, microbiology, human biology and health-related areas.

Applications with non-standard entry qualifications are considered on merit basis

Academic Panel

- Dr Mathi Kandiah PhD
- Dr Geethika Liyanage PhD
- Dr Nadeema Dharmasiri PhD
- Dr Tharanga Dilrukshi PhD
- Dr Dilini Sadeepa PhD
- Dr Dinali Ranaweera PhD
- Prof Deepthi De Silva MRCP
- Ms Punsisi Weerasooriya MSc
- Dr Ruwani Amarasinghe BHMS
- Dr Umayangana Godakanda PhD
- Ms Neranja Sandamini MSc
- Dr Karthika Kathiresan MBBS

NATIONAL HORIZONS CENTRE

A UK center of excellence for training and innovation for the biosciences and healthcare sector. The National Horizons Centre (NHC) is Teesside University's £22.3m centre of excellence for the biosciences and healthcare sector.

The journey of BMS Campus with a humble beginning has evolved into an institution of academic excellence, fostering innovation, creating and shaping the future of next generation leaders. BMS vision of transforming lives and influencing the future is the guiding force behind the success. One of the hallmarks of the BMS Campus has been its commitment to academic rigour, relevance and learning practices to meet changing needs of the students, industry and society.

BMS Campus is a Degree Awarding Institute, recognised by the Ministry of Education in terms of the Universities Act 1978 of Sri Lanka. BMS Campus is a member of the Association of Commonwealth Universities.

M: **070 400 1106** E: **msc.science@bms.ac.lk**

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SAPS Award 2022
Academic & Industry Interface

BEST MANAGEMENT PRACTICES

W: **www.bms.ac.lk**