

**NAME OF THE PROGRAMME: DOCTOR OF PHILOSOPHY (PhD)
(CHEMISTRY)**

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| Programme Type | Research |
| Status | Proposal |
| Start Date | August and January |
| Module | SC-6000 |
| Description | <p>Chemistry plays an important role in developing the modern world, maintaining sustainability and improving the quality of human life. The research areas of the Chemistry Group are diverse and broad such as analytical and environmental chemistry, electrochemistry, organometallic, photochemistry, natural products and synthetic organic chemistry, catalysis and surface chemistry.</p> <p>Candidates will perform a research project under the supervision of staff from the Chemical Sciences Programme and frequently in collaboration with staff members from other disciplines.</p> |
| Research Facilities | <p>Postgraduate students undertake part-time or full-time research in a project supervised by one or more academic staff who are experts in their field. The expectation is that postgraduate students will publish their research in top-tier, international chemistry journals. The Chemistry Group is ably equipped with modern scientific instrumentation to achieve this outcome, including high-field NMR, CHN analyser, GC-MS, HPLC, UF-HPLC, IC, FTIR, UV-Vis spectrometers, AAS, ICP-OES, voltammetric analyzers, automated Kjeldahl total protein analyzer, automated total fat analyzer, automated fibre analyzer, PCR, electrochemical analyzer, electro-chemiluminescence analyzer, ELISA reader, fluorospectrometers, etc.</p> |
| Degree Requirements | <p>A written Thesis is judged acceptable by the Board of Examiners. The Thesis, based on the findings of an approved original research investigation, shall not normally exceed 100,000 words. As stipulated in the relevant UBD regulations, the Examiners may subject a candidate to an oral examination or any other test they think necessary to assess the acceptability of the Thesis.</p> |
| Entry Requirements | <p>Master's degree in Chemistry or closely related discipline from a recognised university, or First class honours BSc degree in Chemistry closely related discipline from a recognised university; Subject to the relevant UBD regulations, and depending on the merits of each case, an MSc by Research candidate in a relevant field in UBD may be considered for conversion to PhD candidature. Shortlisted applicants may be interviewed on a case by case basis.</p> |
| Language Requirements | Relevant English language requirement stipulated by UBD. |

Programme Details

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| Aims and Scope | The PhD Programme in Chemistry aims to make scientists with high level specialised training, in order to cover the increased needs of Industry in related aspects. The scope of the Programme is to provide students the necessary specific scientific information, as well as to train them to develop their skills and analytical capabilities. | |
| Structure | Students conduct an approved, original research project, with the supervision of one or more staff members. Upon completion of their research, they submit a Thesis, which normally does not exceed 100,000 words. | |
| Language | The thesis will be written in English; any potential courses will also be given in English. | |
| Duration of Programme | Full-Time: minimum 36 months, maximum 60 months | Part-Time: minimum 48 months, maximum 84 months |
| Areas of Research/Specialisation | <ul style="list-style-type: none"> • Chemically modified electrodes. • Electro-analysis. • Aquatic environmental chemistry. • Chemical modification of ligno-cellulosic materials for environmental applications. • Monitoring of environmental pollutants such as PAHs and VOCs in air and occupational environments. • Acidity of rainwater (contribution of weak organic acids). • Heavy metals/trace metals in marine organisms and animals. • Extraction and characterization of fats and oils • Analysis of food additives, vitamins and minerals • Soil chemistry; pollution and solid waste • Natural Products • Environmental conservation: Use of local food waste as potential biosorbents for the removal of environmental pollutants. • Study of medicinal and aromatic plants in Brunei Darussalam. • Analysis of nutrient compositions of fruits and vegetables in Brunei Darussalam. • Investigation of the structural and functional attributes of parasitic plants (Mistletoes and Dodders) in Brunei Darussalam. • Study of the optimization of biodiesel production. • Investigation of nutrient contents of local biomass and their potential as biosorbents of pollutants. • Green chemistry using clay catalysis. • Catalysis Chemistry • Chemistry of Schiff bases. • Green technology; Organometallic emitters from natural products. • Dye-sensitized solar cells. • Design, synthesis and structural characterization of potentially new bioactive sulfur-nitrogen chelating agents and their metal chelates. | |

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| | <ul style="list-style-type: none"> • Utilization of sago waste for water purification systems. • Catalytic transfer hydrogenation. • New catch-release catalysts for fine chemical synthesis. • Electrochemistry. • Fabrication of small centres using nanostructured materials. • Spectroscopy • Photo-catalysis. • Biotechnology • New generation nucleic acids and protein biosensors. • Novel chemical biology and biomaterials approaches. • Point-of-care (POC) micro-devices. • Agro/food-based applied biotechnology. • DNA/protein bioinformatics and bioengineering. • Synthesis and characterisation of mixed metal Oxides. • Hydrothermal synthesis. • Solid state materials chemistry particularly perovskites and doped titanium dioxides. <p>More areas will be provided upon arrival of new staff</p> |
| Attendance Type | Full-Time/Part-Time |
| Period of Candidature | Full-Time: 36-60 months Part-Time: 48-84 months |
| Assessment | Assessment includes examination of the Thesis by internal and external examiners. As stipulated in the relevant UBD regulations the examiners may subject a candidate to an oral examination or any other test they think necessary to assess the acceptability of the Thesis. Periodic assessment of the progress of the candidate is carried out as stipulated in the relevant UBD regulations. |
| Demand | Applicants are expected to join the Programme from Brunei Darussalam and overseas. The number of applicants is expected to increase in the future, as the Programme develops a track record. |
| Future Development | The Programme is expected to attract students and to develop according to the demands of the community, the industry and the Academia. New supervisors that will join Computer Science in UBD will also add new disciplines of research. Increasing number of interdisciplinary and transdisciplinary research is expected to be developed. |

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| Major Areas | Analytical and environmental chemistry, electrochemistry, organometallic, photochemistry, natural products and synthetic organic chemistry, catalysis and surface chemistry. |
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For More Information

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| Contact | Programme Leader in Chemical Sciences, Faculty of Science (FOS), UBD |
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