UNIVERSITY OF LEICESTER

Programme Specification (Postgraduate)

FOR ENTRY YEAR: 2026/27

Date created: n/a **Last amended:** 16/12/2024 **Version no.** 1

1. Programme Title(s):

Postgraduate Certificate - Quarry Management and Operations (Company specific)

2. Awarding body or institution:

University of Leicester

3. a) Mode of study

Part-time

b) Type of study

Distance Learning

4. Registration periods:

The normal period of registration is 12 months

The maximum period of registration is 28 months

5. Typical entry requirements:

BSc degree from a UK University or an equivalent qualification, or APL/APEL equivalence to graduate skill set. Experience of the extractive industry is required and a current professional role in which course learning outcomes can be implemented and documented

Satisfy the University's English Language requirements.

6. Accreditation of Prior Learning:

N/A

7. Programme aims:

The programme aims to provide graduate level employees of the partner companies with higher level knowledge and understanding of the scientific, technological, managerial and industrial context of the bulk extractive industries. It is particularly aimed at the needs and legal responsibilities of existing and aspiring Quarry Managers, technical specialists and general managers employed by Holcim, but can be extended to other partner companies.

It aims to meet the needs of the partner companies as part of their people development strategy while operating within the University's rigorous academic standards and UK Qualification Framework. In addition it also operates within a legal context governed by UK and European Quarry legislation.

The course will be a fundamental tool in building capacity within the companies to achieve improved individual performance in the job role, career development and support succession planning. The programme is intended to build accredited high level operationally aware Managers within each company's talent pool as a means of driving individual and corporate performance.

By the end of the programme, students will have acquired a thorough high-level knowledge of business management and engineering technologies involved within the Partner company businesses, enhanced transferable skills such as communication, self-management, team working

and planning and developing strategic decision-making within the industry and business context. They will be able to reflect on their learning and apply it to their individual work context in order to improve performance and effectiveness.

8. Reference points used to inform the programme specification:

- PDR report
- University Education Strategy
- University Employability Strategy
- University of Leicester Academic Audit Evaluation
- Student feedback
- First Destination Survey
- External Examiner's Reports
- Quarry Regulations specifically The Safety, Health and Welfare at Work (Quarries) Regulations, 2008, Safety, Health and Welfare at Work Act, 2005 and its General Application Regulations 2007.
- Company talent development strategy and aims.

9. Programme Outcomes:

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
(a) Discipline specific knowledge and competencies		
(i) Mastery of an appropriate body of knowledge		
Define the principal drivers and content of Health and Safety and practice and relate it to extraction processes.	Distance learning materials, directed reading and narrated Articulate presentations, electronic resources including technical websites delivered via Blackboard; residential presentations, case studies, fieldwork, on-line Self Assessed Questions, group and independent problem solving, site-based and classroom-based exercises and independent research.	Assessed on-line discussion forum, short answer examination and a technical report on a large case study.
Define comminution theory and describe crusher technology and set-up.		Short answer examination.
Identify the key elements of an effective maintenance system, and describe how to implement and manage it.		Short answer examination, review of site maintenance system.
Define the importance of sustainability, circularity and decarbonisation in aggregates business strategy.		Assessed on-line discussion forum, short answer examination, and a report.
Describe the basic financial accounting tools needed to manage the aggregate business at site and national level, and define the principles underlying the company's market assessment, commercial planning and customer relation management.		Assessed on-line discussion forum, and component of large case study.
Describe the key elements in dealing with the planning systems as they relate to minerals.		On-line discussion around planning conditions and controls
Explain how all aspects of the business must be considered when planning or reviewing the performance of an aggregates operation.		Large Case Study as Final Report
Define the principles underlying the company's market assessment,		A significant component of a large case study

commercial planning and customer relations management		
(ii) Understanding and application of key concepts and techniques		
Describe the influence of geology, geological structure and geotechnical assessments on safety and productivity. Identify the key factors in calculation and management of reserves. Define the principals of blasting practice and use them to calculate a blast design and vibration prediction using appropriate spreadsheets Describe the principals of HME operations and be able to estimate and measure productivity. Describe the various emerging technologies for quarry decarbonisation. Describe the different elements of quarry planning and design and demonstrate how they fit together to produce a successful quarry operation. Describe the technology, operation and set-up of crushers, screens, conveyors, feeders, washing plant and sand plant. Describe the nature and classification of aggregate materials (including CDM), together with the required technical properties, and be aware of current developments.	Distance learning materials, directed reading and narrated Articulate presentations, electronic resources including technical websites delivered via Blackboard; residential presentations, case studies, fieldwork, on-line Self Assessed Questions, group and independent problem solving, site-based and classroom-based exercises and independent research.	Assessed on-line discussion forum, short answer examination and a technical report on a large case study. Short answer examination and a technical report on a large case study. Assessed on-line discussion forum, short answer examination, technical report assignment and a technical report on a large case study. Assessed on-line discussion forum, short answer examination, PowerPoint presentation and a technical report on a large case study. Short answer examination and a technical report on a large case study. Assessed on-line discussion forum, short answer examination, PowerPoint presentation and a technical report on a large case study. Short answer examination. Assessed on-line discussion forum, short answer examination, short PowerPoint presentation. Assessed on-line discussion forum, short answer examination.
(iii) Critical analysis of key issues		

Define the key issues in the sustainable management of water and biodiversity in a quarry. Describe the advantages and disadvantages of recycled and secondary aggregates, and the importance of controlling inbound materials. Assess the efficiency of aggregate processing plants for different rock types (including CDM), and be able to recommend improvements. Define Key Performance Indicators and explain how they aid operational management	Distance learning materials, directed reading and narrated Articulate presentations, electronic resources including technical websites delivered via Blackboard; residential presentations, case studies, fieldwork, on-line Self Assessed Questions, group and independent problem solving, site-based and classroom-based exercises and independent research.	Short answer examination and a short PowerPoint presentation. Classroom assignment, followed by short presentation. Assessed on-line discussion forum and technical report for plant review.
(iv) Clear and concise presentation of material		
Produce professional standard Technical Reports on assignments such as Geotechnical Face Appraisals. Prepare PowerPoint presentations which are fit for purpose.	Clear instructions given and examples provided. Web-based resources used. Extensive feedback given for early assessed coursework submissions.	A number of summative Technical Reports, including a large case study. A number of assessed PowerPoint presentations designed for delivery to an audience, and presentation of conclusions from residential coursework to tutors and students.
(v) Critical appraisal of evidence with appropriate insight		
Debate quarrying ideas. Construct and test scientific hypotheses and analyse using data gathered on site.	Distance learning materials and web-based resources. Extensive use of group problem solving exercises at residential, both site-based and classroom-based.	Assessed on-line discussion forums and a number of open discussions at the residential, based on conclusions from residential coursework
(vi) Other discipline specific competencies		
Develop responsibility for the working quarry environment. Describe risks for hazard assessment for quarry-based work. Identify safe practice.	Distance learning materials and web-based resources. Company specific guidelines are issued, with reminders on a regular basis.	Compliance with all company Health & Safety guidelines. Site-based problem solving exercises which require assessment of risks and delivery of safe systems of work.
(b) Transferable skills		
(i) Oral communication		

Present quarrying data and theories using appropriate methods.	Residential-based presentations and discussion groups, with feedback given.	Oral presentations at residential.
(ii) Written communication		
Communicate effectively and appropriately in Technical Reports and projects Use of PowerPoint presentations with the notes facility to convey key ideas, conclusions and recommendations	Clear instructions given and examples provided. Web-based resources used. Extensive feedback given for early assessed coursework submissions.	Assessed Technical Reports and project based on extensive case study. Assessed PowerPoint presentations, including notes.
(iii) Information technology		
Use spreadsheets or other software to enter, manipulate and display numerical data. Use appropriate software packages to prepare written reports and presentations (e.g. Word, PowerPoint)	Subject-embedded exercises. Instructions given at residentials. Web-based tutorials used, and examples and guidelines provided.	Assessed Technical Reports. Assessed Technical Reports and PowerPoint presentations.
(iv) Numeracy		
Select appropriate numerical, statistical and graphical methods to explain and interpret geological concepts.	Instruction given at residential.	Assessed Technical Reports and PowerPoint presentations.
(v) Team working		
Organize and work effectively within a team, and evaluate performance of self and of team.	Residential site-based and classroom-based assignments.	Group presentations of conclusions and recommendations of assignments
(vi) Problem solving		
Solve different design and operational problems relating to the extraction and processing of aggregates.	Distance learning material, residential classes, group work, and individual projects.	Residential presentations, Technical Reports and Final Case Study Project
(vii) Information handling		
Effectively search for, gather and utilise information relevant to aggregate production problem solving.	Distance learning material, residential classes, group work, and individual projects.	Discussion Forums, Technical Reports and PowerPoint presentations
(viii) Skills for lifelong learning		
Demonstrate intellectual independence. Develop and implement a personal plan of work to meet assignment deadlines. Identify targets for personal, career and academic	Independent assignments and presentations requiring assessment of Distance Learning information and wider resources. Clear guidance given throughout programme, with deadlines spaced throughout. Informal tutorials with each student allow areas for	Assessed independent work, including Discussion Forums and Final Case Study project. Assessed coursework.

development.	development to be identified	Assessed coursework

10. Progression points:

The following dispensation from Senate Regulation 6 has been approved:

- The maximum number of taught credits that a student may re-sit or re-submit is 40 credits.

11. Special features:

There are a number of special features involved in a multi-national, blended learning, joint taught and assessed, specialist course of this type.

The course provides the opportunity for students to combine their learning with their professional job role, embedding learning in these activities and using real workplace issues as a vehicle for their learning and study. This aligned study pathway ensures a rapid 'return' on the investment in the student and visible and measurable improvement to the individual and partner companies.

Company aims and objectives for the programme are met by the use of many real extractive industry operations as 'field teaching facilities', residentials for corporate and specialist network development, and aligned assessment methods to the company environment

11a. Research-inspired Education

Students on this programme will advance through the four quadrants of the University of Leicester Research-inspired Education Framework as follows:

RiE Quadrant	Narrative
	The Quarry Management and Operations programme offers a comprehensive education in technical and managerial aspects of the aggregates quarrying industry, through delivery of information, critical thinking, and problem-solving through exposure to current best–practice and active research. In this industry sector, much of the research is undertaken by the companies themselves, and the large multi-national equipment suppliers.
Research-briefed Bringing staff research content into the curriculum.	• **Research-briefed** - Students engage with challenging learning inspired by research from staff within the University, and by leading experts from the sponsoring company and related equipment suppliers, engaged in their own research and development. All contributors bring their research straight into the classroom and sites, making learning exciting and relevant.
Research-based	• **Research-based** – Classroom and site-based problem-solving exercises often utilize data samples from Leicester and Holcim researchers, enabling students to

Framed enquiry for exploring existing knowledge.	understand how progress is being made in managing aggregate extraction and processing, particularly in the area of circularity and carbo reduction.
Research-oriented Students critique published research content and process.	• **Research-oriented** – Students learn to collect and critically appraise data, and conduct numerical analyses in computer classes and various assessments.
Research-apprenticed Experiencing the research process and methods; building new knowledge.	• **Research-apprenticed –** The programme includes training in report writing, group work, presentation skills, and critical assessment of data. Students present findings through written reports and oral presentations. Site visits during the three residentials are key, providing opportunities to collect and interpret operational data.

Teaching on this programme will be research-informed (it draws consciously on systematic inquiry into the teaching and learning process itself) in the following way:

The School supports all staff involved in teaching to gain an accredited Higher Education teaching qualification, in which they demonstrate their use of teaching theory to support their own practice and reflect on their current teaching and continuing professional development.

Academic staff meet twice per year to discuss the latest developments in teaching and learning, for example most recently in regard to generative artificial intelligence. Selected staff conduct horizon scanning of the latest journal papers in Journal of Geoscience Education and bring ideas at the forefront of innovation to their peers.

12. Indications of programme quality:

It has received excellent reports from external examiners in the areas of teaching and learning, assessment and student support.

The partner company (Holcim) is one of the world's largest construction material companies. The programme has a Steering Committee which includes academic members of the University of Leicester, together with senior training and operational managers from the partner company, reflecting the collaborative nature of the programme. Many regional and national managers are involved in delivering or coaching aspects of the programme. They undertake regular reviews of the course content and delivery. Their continued sponsorship is clear evidence of the course's value and credibility.

13. Scheme of Assessment

Award is Postgraduate Certificate – Quarry Management and Operations

This programme follows the Regulations for Taught Postgraduate programmes as published in Senate Regulation 6 with the following approved dispensation:

The total number of credits which must be passed is 40; the number of taught credits which may be compensated is 20.

This programme follows the 60 credit PGCert route.

14. Resits

This programme follows the Regulations for Taught Postgraduate programmes as published in Senate Regulation 6 with the additional dispensation noted in Section 10 above.

15. Additional Information

None.

16. External Examiners

The details of the External Examiner(s) for this programme and the most recent External Examiners' reports can be found at
https://uniofleicester.sharepoint.com/sites/university/exam-papers/SitePages/Exam-Papers.aspx

Appendix 1: Programme structure (programme regulations)
The programme comprises three modules of 20 credits each, each module being delivered over a 16 week period. Each module starts with a six week study period, during which they study the resource material, engage with on-line discussion topics and attempt a number of self-assessed questions. This is followed by a six day residential comprising a mixture of seminars, site visits and problem solving exercises, culminating in a short-answer examination. The module concludes with a nine week period of further study and completion of assessed assignments/projects.

Module 1	GL7601 Aggregate Quarry Operations (20 credits)
Module 2	GL7062 Aggregate Processing Operations (20 credits)
Module 3	GL7603 Aggregate Business and Sustainable Management (20 credits)

Appendix 2: Module Specifications

See module specification database