Course Specification

A. Course Information			
Final award title(s)	MSc Civil and Structural Engineering		
Intermediate exit award title(s)	PgCert Civil and Structural Engineering PgDip Civil and Structural Engineering		
UCAS Code		**Course Code(s)**	5466, 5467, 5471, 5472
	London South Bank University		
School	☐ ASC ☐ ACI ☒ BEA ☐ BUS ☐ ENG ☐ HSC ☐ LSS		
Division	Civil and Building Services Engineering		
Course Director	Dr Finian McCann		
Delivery site(s) for course(s)	☒ Southwark ☐ Havering ☐ Other: please specify		
Mode(s) of delivery	☒Full time ☒Part time ☐other please specify		

Length of course/start and finish dates

Mode	Length years	Start - month	Finish - month
Full time	1 1 yr 4 month	September January	September May
Full time with placement/ sandwich year	n/a		
Part time	2 2 yrs 4 months	September January	September May
Part time with Placement/ sandwich year			

Is this course generally suitable for students on a Tier 4 visa?	Please complete the International Office questionnaire **Yes** ~~No~~ Students are advised that the structure/nature of the course is suitable for those on a Tier 4 visa but other factors will be taken into account before a CAS number is allocated.	
Approval dates:	Course(s) validated / Subject to validation	November 2019
	Course specification last updated and signed off	September 2019

Professional, Statutory & Regulatory Body accreditation	To be provided by the Joint Board of Moderators (comprising the Institution of Civil Engineers, the Institution of Structural Engineers, the Institute of Highway Engineers and the Chartered Institution of Highways and Transportation).	
Reference points:	Internal	Corporate Strategy 2015-2020 Academic Quality and Enhancement Manual School Strategy LSBU Academic Regulations
	External	QAA Quality Code for Higher Education 2013 Framework for Higher Education Qualifications Subject Benchmark Statements (Dated) PSRB Competitions and Markets Authority SEEC Level Descriptors 2016

B. Course Aims and Features

Distinctive features of course	This is a technical based postgraduate course specialising in civil and structural engineering covering the areas of structures, geotechnics, water engineering, conservation, advanced structural analysis and design, structural computing simulation and also offering modules linked with transportation engineering. Students will also be required to complete an individual project in a specific area of the course studied, providing them with the opportunity of pursuing a course of independent study. The work is to be of an investigative nature having an experimental, analytical, computer-based or fieldwork input.
Course Aims	The MSc Civil and Structural Engineering course aims to: 1. Produce graduates who are committed to a career in civil and structural engineering with a range of employers. 2. Produce graduates equipped to take up professional employment in the construction industry and become lifelong learners with an appreciation of the value to society of an education in civil and structural engineering. 3. Produce graduates who have knowhow and understanding of the key aspects of civil and structural engineering. 4. Allow graduates to acquire and develop problem-solving skills, and subject-specific skills. 5. Develop graduates who bring practical solutions to design problems and who have the technical skills to see their ideas through to realisation. 6. Provide an opportunity to those in full-time employment to study towards a degree in structural engineering on a part-time basis. 7. Create a unique educational environment that seeks to benefit from the practical experience of mature and part-time students. 8. Provide an engineering education centred within the built environment that recognises the important roles of other professions in the development of the built environment and cultivates interaction and teamwork with these other professionals. 9. Provide graduates with the necessary further learning which will provide the full educational base for a Chartered Engineer.

Course Learning Outcomes	a) Students will have knowledge and understanding of: A1: A comprehensive knowledge and understanding of scientific principles and methodology necessary to underpin their education in their engineering discipline, and an understanding and know-how of the scientific principles of related disciplines, to enable appreciation of the scientific and engineering context, and to support their understanding of relevant historical, current and future developments and technologies. (SM1m) A2: Knowledge and understanding of mathematical and statistical methods necessary to underpin their education in their engineering discipline and to enable them to apply a range of mathematical and statistical methods, tools and notations proficiently and critically in the analysis and solution of engineering problems. (SM2m) Ability to apply and integrate knowledge and understanding of other engineering disciplines to support study of their own engineering discipline and the ability to evaluate them critically and to apply them effectively. (SM3m) A3: Understanding the need for a high level of professional and ethical conduct in engineering and knowledge of professional codes of conduct. (EL1m) A4: Knowledge and understanding of the commercial, economic and social context of engineering processes. (EL2) A5: Knowledge of management techniques, including project and change management, that may be used to achieve engineering objectives, their limitations and how they may be applied appropriately. (EL3m) A6: Understanding of the requirement for engineering activities to promote sustainable development and ability to apply quantitative techniques where appropriate (EL4m) A7: Awareness of relevant legal requirements governing engineering activities, including personnel, health & safety, contracts, intellectual property rights, product safety and liability issues, and an awareness that these may differ internationally. (EL5m) A8: Knowledge and understanding of risk issues, including health & safety, environmental and commercial risk, risk assessment and risk management techniques and an ability to evaluate commercial risk. (EL6m) b) Students will develop their intellectual skills such that they are able to: B1: Understanding of engineering principles and the ability to apply them to undertake critical analysis of key engineering processes. (EA1m)

	B2: Ability to identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques. (EA2) B3 Ability to apply quantitative and computational methods, using alternative approaches and understand their limitations, in order to solve engineering problems and to implement appropriate action. (EA3m) B4: Understanding of, and the ability to apply, an integrated or systems approach to solving engineering problems. (EA4) B5: Understand and evaluate business, customer and user needs, including considerations such as the wider engineering context, public perception and aesthetics. (D1) B6: Investigate and define the problem, identifying any constraints including environmental and sustainability limitations; ethical, health, safety, security and risk issues; intellectual property; codes of practice and standards. (D2) B7: Work with information that may be incomplete or uncertain, quantify the effect of this on the design and where appropriate, use theory or experimental research to mitigate deficiencies. (D3m) B8: Apply advanced problem-solving skills, technical knowledge and understanding, to establish rigorous and creative solutions that are fit for purpose for all aspects of the problem including production, operation, maintenance and disposal. (D4) B9: Plan and manage the design process, including cost drivers, and evaluate outcomes. (D5) B10: Communicate their work to technical and non-technical audiences. (D6) c) Students will acquire and develop practical skills such that they are able to: C1: Understanding of contexts in which engineering knowledge can be applied (for example operations and management, application and development of technology, etc.). (P1) C2: Knowledge of characteristics of particular equipment, processes or products, with extensive knowledge and understanding of a wide range of engineering materials and components. (P2m) C3: Ability to apply relevant practical and laboratory skills. (P3) C4: Understanding the use of technical literature and other information sources. (P4)

	C5: Knowledge of relevant legal and contractual issues. (P5); and nderstanding of appropriate codes of practice and industry standards. (P6) C6: Awareness of quality issues and their application to continuous improvement. (P7); Ability to work with technical uncertainty. (P8) C7: Understanding of different roles within an engineering team and the ability to exercise initiative and personal responsibility, which may be as a team member or leader. (P11m). d) Students will acquire and develop transferrable skills such that they are able to: D1: Apply their skills in problem-solving, communication, information retrieval, working with others and the effective use of general IT facilities. (G1) D2: Plan self-learning and improve performance, as the foundation for lifelong learning/CPD. (G2) D3: Monitor and adjust a personal programme of work on an on-going basis (G3m) D4: Exercise initiative and personal responsibility, which may be as a team member or leader. (G4)

C. Teaching and Learning Strategy

- Enhance learning and understanding through a combination of lectures, seminars, tutorials, practical classes, coursework, design, computer sessions, project work and self-study. Throughout the course students have module guides relevant to each topic of study, giving additional reading material, which students are encouraged to use for private study to consolidate the formal learning process, and both broaden and deepen their knowledge and understanding in the subject area.
- Develop intellectual skills through the teaching and learning programme. Analysis and problem-solving skills are further developed through regular tutorial sheets and design-based exercises. Experimental, research and design skills are further developed through coursework exercises, laboratory, research and design projects.
- Practical skills are developed through the teaching and learning programme.
- Experimental skills are developed through laboratory experiments and project work.
- Transferrable skills are developed through a combination of coursework, presentations, provision of module guides, setting coursework deadlines, laboratory experiments, project work, design work and individual learning.

D. Assessment

- Testing of the knowledge base is through a combination of unseen written examinations, closed-book tests, essays, oral presentations, design exercises, laboratory reports, poster displays and individual projects.

- Analysis and problem-solving skills are assessed through unseen written examinations and class tests. Experimental, research and design skills are assessed through laboratory reports, coursework exercises, project reports, poster displays and oral presentations.

- Practical skills are assessed through a mixture of coursework exercises, laboratory reports, presentations, oral examinations, unseen written examinations, computer-based projects, and individual investigative-based projects.

- Transferrable skills are assessed through a mixture of coursework exercises, laboratory reports, presentations, oral examinations, unseen written examinations, computer-based projects and individual investigative-based projects.

E. Academic Regulations

The University's Academic Regulations apply for this course. Any course specific protocols will be identified here.

F. Entry Requirements

In order to be considered for entry to the course applicants will be required to have the following qualifications:

- An undergraduate Civil/Structural Engineering degree with a minimum of a BEng (Hons) – Lower Second (2.2) classification, or equivalent; or
- An undergraduate Civil/Structural Engineering degree with a minimum of a BSc (Hons) – Upper Second (2.1) classification, or equivalent; or
- Applicants with appropriate relevant professional experience deemed to be equivalent to a First degree will also be considered.

For applicants whose first language is not English, an IELTS score of 6.5 or equivalent is required.

G. Course structure(s)

Course overview

- Each of the six taught modules is worth 20 credits, while the Project is worth 60 credits.

- Full-time students study three modules in Semester One, with assessment in January, and another three modules in Semester Two, with assessment in May / June. Students starting in September are allocated a project in November, which is due for submission the following September; students starting in January are allocated their projects in March with submission due in May of the following year.

- Part-time students study and are assessed on two modules in Semester One of their first year, and another two modules in Semester Two of their first year. In their second year, they study one module in Semester One and another module in Semester Two. Students starting in September are allocated their projects in November of their second year, with submission due the following September; students starting in January are allocated projects in March of their second year, with submission due in May of the following year.

H. Course Modules

	Code	Credits	Sem	Mode/Day	Assessment
Advanced Structural Design	BEA-7-449	20	1	FT and PT1 Thursday	CW/Ex 30/70
Computational Analysis and Modelling	BEA-7-534	20	1	FT and PT1 Thursday	CW/Ex 100/0
Water Engineering	BEA-7-495	20	1	FT and PT2 Friday	CW/Ex 30/70
Soil-Structure Engineering	BEA-7-499	20	2	FT and PT1 Thursday	CW/Ex 30/70
Structural Dynamics and Earthquake Engineering	BEA-7-500	20	2	FT and PT1 Thursday	CW/Ex 30/70
Highway and Railway Engineering	BEA-7-535	20	2	FT and PT2 Friday	CW/Ex 50/50
Project	BEA-7-497	60	1,2,3	FT and PT2 Friday	CW/Ex 100/0

FT = full-time students
PT1 = first year, part-time students; PT2 = second year, part-time students

I. Timetable information

- Timetables are provided online prior to commencing the Course and also in hard-copy at induction.

J. Costs and financial support

Tuition fees/financial support/accommodation and living costs

- Information on tuition fees/financial support can be found by clicking on the following link - http://www.lsbu.ac.uk/courses/undergraduate/fees-and-funding or
- http://www.lsbu.ac.uk/courses/postgraduate/fees-and-funding
- Information on living costs and accommodation can be found by clicking the following link- https://my.lsbu.ac.uk/my/portal/Student-Life-Centre/International-Students/Starting-at-LSBU/#expenses

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Appendix A: Curriculum Map

This map provides a design aid to help course teams identify where course outcomes are being taught (T), developed (D), assessed (A) within the course. It also provides a checklist for quality assurance purposes and may be used in validation, accreditation and external examining processes. Making the learning outcomes explicit will also help students to monitor their own learning and development as the course progresses.

Module		Course Outcomes										
Title	**Code**	**A1**	**A2**	**A3**	**A4**	**A5**	**A6**	**A7**	**A8**			
Advanced Structural Design	BEA-7-449	TDA	DA		D		D					
Computational Analysis and Modelling	BEA-7-534	TDA	TDA			D						
Water Engineering	BEA-7-495	TDA	TDA		D		TD	D				
Soil-Structure Engineering	BEA-7-499		TDA				D					
Structural Dynamics and Earthquake Engineering	BEA-7-500	TDA	TDA		D		D		D			
Highway and Railway Engineering	BEA-7-535		DA	D	D	DA	DA	TDA	DA			
Project	BEA-7-497	D	D									
Title	**Code**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**	**B10**	
Advanced Structural Design	BEA-7-449	TDA	DA	DA	D	D		DA	TDA	D	DA	
Computational Analysis and Modelling	BEA-7-534		D	TDA	D			DA	TDA		D	
Water Engineering	BEA-7-495	TDA	TDA	TDA	D				TDA		D	
Soil-Structure Engineering	BEA-7-499	TDA	DA	DA				DA	TDA		D	
Structural Dynamics and Earthquake Engineering	BEA-7-500	TDA	DA	TDA	DA			D	DA			
Highway and Railway Engineering	BEA-7-535	TDA	DA	TDA		TD	T		DA		D	
Project	BEA-7-497	D		D			D	D	DA		DA	
Title	**Code**	**C1**	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**D1**	**D2**	**D3**	**D4**
Advanced Structural Design	BEA-7-449	D	TD		D		TDA	DA	DA			D
Computational Analysis and Modelling	BEA-7-534	D	TD	TDA				D	TDA	D		D
Water Engineering	BEA-7-495	D	D	TD	D	D	TDA		TDA			D
Soil-Structure Engineering	BEA-7-499	DA		D	DA		DA	D	TDA			D
Structural Dynamics and Earthquake Engineering	BEA-7-500	D	D	DA	D		DA		DA			
Highway and Railway Engineering	BEA-7-535	TDA	D	D		DA	D	D	TDA			
Project	BEA-7-497	DA	D	DA	TDA	DA			DA	DA	DA	DA

T: taught, D: developed, A: assessed

Appendix B: Personal Development Planning

1	Supporting the development and recognition of skills through the personal tutor system.	The Course Director is the personal tutor of all the students (full-time and part-time). This is brought to the attention of all students at induction and regularly during the year. Each student will be offered a 15 minutes interview with the Personal Tutor, once in each of the two semesters; items discussed will be noted in the students' PDP diary.
2	Supporting the development and recognition of skills in academic modules.	All modules are structured so that the combination of courseworks introduce and develop the technical skills at the post-graduate level in the fields of experimentation, hands-on computer modelling, design exercises, critical analysis, analysis methodologies, data interpretation and verification, research methodologies. Assessed coursework, in stages, provide the feedback for the consolidation and improvement of these academic skills.
3	Supporting the development and recognition of skills through purpose designed modules.	The modules have been designed to support the development of skills in civil and structural engineering.
4	Supporting the development and recognition of skills through research projects and dissertation works.	Students will develop research skills in a variety of the modules, but in particular in the project module.
5	Supporting the development and recognition of career management skills.	An academic staff, who is the Liaison Officer for the Institution of Civil Engineers briefs the students on the benefits of the student membership of the institution. The London Branch of the Institution of Civil Engineers visits the students on site and briefs them about the activities and the benefits of the membership of the local activities, and routes to Chartership. Similar links through academic staff will be formed with other relevant professional bodies including the Chartered Institute of Highways and Transportation, the Institution of Highway Engineers, and the Institution of Structural Engineers. Students are encouraged to use the LSBU Careers Office for CV preparation, interview skills, job vacancies.
6	Supporting the development and recognition of skills through work placements or work experience.	Not applicable.
7	Supporting the development of skills by recognising that they can be developed through extracurricular activities.	Field trips and site visits are organised by members of the teaching team throughout the academic year.
8	Supporting the development of the skills and attitudes as a basis for continuing professional development.	Notices of lectures and presentations at the Institution of Civil Engineers, the Institution of Structural Engineers, the Chartered Institute of Highways and Transportation and the Institution of Highway Engineers are brought to the students' attention.
9	Other approaches to personal development planning.	Not applicable.
10	The means by which self-reflection, evaluation and planned development are supported, e.g. electronic or paper-based learning log or diary.	Weekly meetings for the Project between the student and the supervisor. Written and/or verbal feedback on assessed coursework.

Appendix C: Learning Outcomes
Correlation between JMB and LSBU codes on Learning Outcomes

JMB Guidelines January 2018			Course Outcomes LSBU	
Science and Mathematics (SM)	SM1m	Knowledge and understanding of scientific principles and methodology necessary to underpin their education in their engineering discipline, to enable appreciation of its scientific and engineering context, and to support their understanding of relevant historical, current and future developments and technologies	A1	**Knowledge and Understanding**
	SM2m	Knowledge and understanding of mathematical and statistical methods necessary to underpin their education in their engineering discipline and to enable them to apply mathematical and statistical methods, tools and notations proficiently in the analysis and solution of engineering problems	A2	
	SM6m	Ability to apply and integrate knowledge and understanding of other engineering disciplines to support the study of their own engineering discipline		
Engineering and Analysis (EA)	EA1m	Understanding of engineering principles and the ability to apply them to undertake critical analysis of key engineering processes.	B1	**Intellectual Skills**
	EA2	Ability to identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques	B2	
	EA3m	Ability to apply quantitative and computational methods, using alternative approaches and understanding their limitations, in order to solve engineering problems and to implement appropriate action.	B3	
	EA4	Understanding of, and the ability to apply, an integrated or systems approach to solving engineering problems	B4	
Design (D)	D1	Understand and evaluate the business, customer and user needs, including considerations such as the wider engineering context, public perception and aesthetics	B5	
	D2	Investigate and define the problem, identifying any constraints including environmental and sustainability limitations; ethical, health, safety, security and risk issues; intellectual property; codes of practice and standards	B6	
	D3m	Work with information that may be incomplete or uncertain and quantify the effect of this on the design	B7	
	D4	Apply advanced problem-solving skills, technical knowledge and understanding, to establish rigorous and creative solutions that are fit for purpose for all aspects of the problem including production, operation, maintenance and disposal	B8	
	D5	Plan and manage the design process, including cost drivers, and evaluate outcomes	B9	
	D6	Communicate their work to technical and non-technical audiences	B10	

JMB Guidelines January 2018			Course Outcomes LSBU	
Economic, legal, social, ethical and environmental context (EL)	EL1m	Understanding the need for a high level of professional and ethical conduct in engineering and a knowledge of professional codes of conduct and how ethical dilemmas can arise.	A3	**Knowledge and Understanding**
	EL2	Knowledge and understanding of the commercial, economic and social context of engineering processes	A4	
	EL3m	Knowledge and understanding of management techniques, including project management, that may be used to achieve engineering objectives, their limitations, and how they can arise.	A5	
	EL4	Understanding of the requirement for engineering activities to promote sustainable development and ability to apply quantitative techniques where appropriate	A6	
	EL5m	Awareness of relevant legal requirements governing engineering activities, including personnel, health & safety, contracts, intellectual property rights, product safety and liability issues	A7	
	EL6m	Knowledge and understanding of risk issues, including health & safety, environmental and commercial risk, and risk assessment and risk management techniques and an	A8	
Engineering practice (P)	P1	Understanding of contexts in which engineering knowledge can be applied (for example operations and management, application and development of technology, etc.)	C1	**Practical Skills**
	P2m	Knowledge of characteristics of particular equipment, processes or products, with extensive knowledge and understanding of a wide range of engineering materials and components.	C2	
	P3	Ability to apply relevant practical and laboratory skills	C3	
	P4	Understanding the use of technical literature and other information sources	C4	
	P5	Knowledge of relevant legal and contractual issues	C5	
	P6	Understanding of appropriate codes of practice and industry standards	C5	
	P7	Awareness of quality issues and their application to continuous improvement	C6	
	P8	Ability to work with technical uncertainty	C7	
	P11m	Understanding of different roles within an engineering team and the ability to exercise initiative and personal responsibility, which may be as a team member of leader.	C7	
Additional general skills (G)	G1	Apply their skills in problem-solving, communication, information retrieval, working with others and the effective use of general IT facilities	D1	**Transferable Skills**
	G2	Plan self-learning and improve performance, as the foundation for lifelong learning/CPD	D2	
	G3m	Monitor and adjust a personal programme of work on a on-going basis	D3	
	G4	Exercise initiative and personal responsibility, which may be as a team member or leader	D4	

Appendix D: Terminology

awarding body	a UK higher education provider (typically a university) with the power to award higher education qualifications such as degrees
bursary	a financial award made to students to support their studies; sometimes used interchangeably with 'scholarship'
collaborative provision	a formal arrangement between a degree-awarding body and a partner organisation, allowing for the latter to provide higher education on behalf of the former
compulsory module	a module that students are required to take
contact hours	the time allocated to direct contact between a student and a member of staff through, for example, timetabled lectures, seminars and tutorials
coursework	student work that contributes towards the final result but is not assessed by written examination
current students	students enrolled on a course who have not yet completed their studies or been awarded their qualification
delivery organisation	an organisation that delivers learning opportunities on behalf of a degree-awarding body
distance-learning course	a course of study that does not involve face-to-face contact between students and tutors
extracurricular	activities undertaken by students outside their studies
feedback (on assessment)	advice to students following their completion of a piece of assessed or examined work
formative assessment	a type of assessment designed to help students learn more effectively, to progress in their studies and to prepare for summative assessment; formative assessment does not contribute to the final mark, grade or class of degree awarded to students

higher education provider	organisations that deliver higher education
independent learning	learning that occurs outside the classroom that might include preparation for scheduled sessions, follow-up work, wider reading or practice, completion of assessment tasks, or revision
intensity of study	the time taken to complete a part-time course compared to the equivalent full-time version: for example, half-time study would equate to 0.5 intensity of study
lecture	a presentation or talk on a particular topic; in general lectures involve larger groups of students than seminars and tutorials
learning zone	a flexible student space that supports independent and social earning
material information	information students need to make an informed decision, such as about what and where to study
mode of study	different ways of studying, such as full-time, part-time, e-learning or work-based learning
modular course	a course delivered using modules
module	a self-contained, formally structured unit of study, with a coherent and explicit set of learning outcomes and assessment criteria; some providers use the word 'course' or 'course unit' to refer to individual modules
national teaching fellowship	a national award for individuals who have made an outstanding impact on student learning and the teaching profession
navigability (of websites)	the ease with which users can obtain the information they require from a website
optional module	a module or course unit that students choose to take
performance (examinations)	a type of examination used in performance-based subjects such as drama and music
professional body	an organisation that oversees the activities of a particular profession and represents the interests of its members
prospective student	those applying or considering applying for any programme, at any level and employing any mode of study, with a higher education provider

regulated course	a course that is regulated by a regulatory body
regulatory body	an organisation recognised by government as being responsible for the regulation or approval of a particular range of issues and activities
scholarship	a type of bursary that recognises academic achievement and potential, and which is sometimes used interchangeably with 'bursary'
semester	either of the parts of an academic year that is divided into two for purposes of teaching and assessment (in contrast to division into terms)
seminar	seminars generally involve smaller numbers than lectures and enable students to engage in discussion of a particular topic and/or to explore it in more detail than might be covered in a lecture
summative assessment	formal assessment of students' work, contributing to the final result
term	any of the parts of an academic year that is divided into three or more for purposes of teaching and assessment (in contrast to division into semesters)
total study time	the total time required to study a module, unit or course, including all class contact, independent learning, revision and assessment
tutorial	one-to-one or small group supervision, feedback or detailed discussion on a particular topic or project
work/study placement	a planned period of experience outside the institution (for example, in a workplace or at another higher education institution) to help students develop particular skills, knowledge or understanding as part of their course
workload	see 'total study time'
written examination	a question or set of questions relating to a particular area of study to which candidates write answers usually (but not always) under timed conditions