Course Specification

A. Course Information			
Final award title(s)	MEng (Hons)/ BEng Petroleum Engineering		
Intermediate exit award title(s)	CertHE, DipHE		
UCAS Code	H850	**Course Code(s)**	4528, 3016
	London South Bank University		
School	☐ ASC ☐ ACI ☐ BEA ☐ BUS ☒ ENG ☐ HSC ☐ LSS		
Division	Chemical and Petroleum Engineering		
Course Director	Dr Andrew Fergusson-Rees		
Delivery site(s) for course(s)	☒ Southwark ☐ Havering ☐ Other		
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	4/3	September	June
Full time with placement/ sandwich year	5/4	September	June
Part time			
Part time with Placement/ sandwich year			

Is this course generally suitable for students on a Tier 4 visa?	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. Please complete the International Office questionnaire.	
Approval dates:	Course(s) validated / Subject to validation	June 2015
	Course specification last updated and signed off	September 2018
Professional, Statutory & Regulatory Body accreditation	MEng accredited by the Energy Institute on behalf of the Engineering Council for the purposes of fully meeting the academic requirement for registration as a Chartered Engineer (2017-2021). BEng (Hons) accredited by the Energy Institute on behalf of the	

	Engineering Council for the purposes of fully meeting the academic requirement for registration as an Incorporated Engineer and partially meeting the requirement for registration as a Chartered Engineer (2017-2021).	
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 (QAA, 2008); Subject Benchmark Statements: Engineering 2015 The Accreditation of Higher Education Programmes (AHEP-3 2014) SEEC Level Descriptors 2016 Competitions and Markets Authority

B. Course Aims and Features

Distinctive features of course	The MEng/BEng (Hons) Petroleum Engineering course is distinctive in that it teaches the theory, understanding and skills that are involved in a wide range of possible careers in the petroleum industry. The programme offers valuable hands-on experience of industry software, which is then applied to the design project to show its application in the real world. This and the investigative and laboratory technique work undertaken equip students with skills that can be transferred to the workplace. The sandwich option involves a year work placement and provides even more understanding of how industry functions. Our course is designed to cover the key areas of petroleum engineering. It takes you through the fundamentals of petroleum engineering and petroleum process science to core topics such as petroleum geoscience, reservoir engineering, petrophysics, drilling and production engineering. It also covers the basic and applied engineering sciences which are fundamental to the understanding of the flow and behaviour of fluids, including (crude) oil and gas. These apply to a number of chemical and process industries and therefore allow us to integrate the petroleum engineering and chemical engineering courses. The MEng/BEng (Hons) Petroleum Engineering is fully accredited with the Energy Institute and offers the most direct route to achieving chartered engineer (CEng) registration.
Course Aims	The MEng/BEng (Hons) Petroleum Engineering aims to 1. Produce graduates trained in the core discipline of Petroleum Engineering including oil and gas reservoir engineering, drilling engineering, production engineering and processing. Such graduates typically find employment in the petroleum industry. 2. To produce MEng graduates who are equipped with the relevant understanding, skills and knowledge required to operate effectively in the oil and gas sector. 3. Produce graduates capable of contributing to the profession of petroleum engineering in the context of modern industrial practice and sustainable development. 4. To enable students to develop an understanding of relevant

	disciplines associated with petroleum engineering in order to operate in multidisciplinary teams 5. Develop students' knowledge of mathematics, applied sciences, engineering methods and safety, in support of the central themes of the course. 6. Develop students' intellectual and reasoning powers, their ability to perceive the broader perspective, and their problem-solving skills through the integration of a broad range of subject material. 7. Teach students to communicate clearly, to argue rationally and to draw conclusions based on an analytical and critical approach to data and systems. 8. To encourage the development of personal qualities and professional competences of petroleum engineers 9. Develop the transferable skills expected of an honours graduate who will work in multi-disciplinary teams with technical, commercial and management staff in industrial and other occupations.
Course Learning Outcomes	a) Students will have knowledge and understanding of: A1-Mathematics, science and engineering underlying the practice of petroleum engineering. A2-The interactions involved in petroleum engineering systems and analytical and computational tools to deal with these. Mathematical and computer models in the design and analysis of production projects, and an appreciation of their benefits and limitations. A3-The scope of petroleum engineering from exploration through production to processing. The professional and ethical responsibilities in the global and social context of engineering. A thorough understanding of current practice in petroleum engineering and its limitations and some appreciation of likely new developments. Current technological and commercial challenges and development of the petroleum industry. A4-The economic, management and statutory requirements involved in the practice of petroleum engineering. The business practices and their limitations, and how these may be applied appropriately. b) Students will develop their intellectual skills such that they are able to: B1 Use mathematics, science and engineering to support theoretical and practical analysis of petroleum production operations. B2 Employ concepts from the applied and engineering sciences to design and evaluate petroleum exploration and production systems. Use scientific principles in the modelling and analysis of petroleum engineering systems and processes

	B3 Show awareness of the significance of safety in design work. Critically analyse commercial risks through understanding the basis of such risks. B4 use fundamental knowledge to investigate new and emerging technologies B5 extract data pertinent to an unfamiliar problem, and apply in its solution using computer based tools when appropriate B6 integrate engineering principles of a multi-disciplinary nature in order to propose solution to problems B7 apply management and business practices appropriately B8 produce engineering solutions which are consistent with ethical and social responsibilities c) Students will acquire and develop practical skills such that they are able to: C1-Use computers and current software in quantitative and analytical work, as well as general information technology for communication and data handling. Use software commercially available in the simulation of oil and gas assets management C2 -plan and manage work (both individually and in teams. Communicate effectively using appropriate media. C3 -Evaluate designs and systems to identify areas of potential hazard and environmental threat and propose improvements. C4 -Use laboratory, engineering and measuring equipment to provide data in support of theoretical understanding. C5- Analyse and solve engineering problems, often on the basis of limited and imperfect data. Critically apply scientific evidence based methods in the solution of problems C6 -apply principles of project management d) Students will acquire and develop transferrable skills such that they are able to: D1- Demonstrate literacy and numeracy skills. Manipulate, sort and present data in forms useful for understanding. Select, interpret and validate data, identifying possible errors and inconsistencies. D2-Communicate clearly the findings of experiments, projects and other assignments using written reports, oral and visual presentations. D3- Work effectively in a team, recognising the roles played by different team members.

	D4- Manage own responsibilities, including time and task management. D5- Undertake self-development and the capacity to learn D6- Identify and solve problems in familiar and unfamiliar situations D7- Adapt to change in the working environment.

C. Teaching and Learning Strategy

Lectures, tutorials and laboratory practicals especially at level 4will cover A1. The behaviour of systems, A2, is introduced in classes at all levels, and is a feature of project work. Project work also shows the scope of the discipline, A3.

Much of the understanding of A4 will be gained in specific modules, mainly at levels 5, 6 and 7. Statutory requirements, including safety, feature throughout the course, in practical work in particular.

Students are encouraged to attend the conferences such as those organised by the Society of Petroleum Engineers, London section. Also, invited speakers will deliver presentations at LSBU on relevant and current topics in petroleum engineering.

Most of the curriculum will support B1-B8; they are developed through lectures, individual and group problem-based work, including the final project. In private study, students will develop skills by writing laboratory reports, and tackling problems set by the tutor or in past examinations, case studies, and projects.

(B5) is developed in computer laboratory sessions embedded in modules and projects.

C1: Computing skills for engineering and science will be developed in practical workshops at level 4. Students also learn the principles and study the application of specialist engineering packages.

C2, C3 will be major part of small projects embedded in some modules and in the two module projects, and students will receive guidance on application of principles studied earlier. C4 will be acquired in practical workshop and laboratory sessions.

Projects, especially the final year project will be open-ended, developing C5 and C6.

D1 is developed in laboratory practical work and design tasks; students for example obtain data from handbooks and computer databases, and use it in calculations, graphical solutions and computer applications.

D2, D3: report-writing and team-working skills are developed in laboratory and project-oriented modules throughout the course. D4-7 developed along the course.

D. Assessment

Content, knowledge and understanding is assessed through coursework, or coursework and examination, oral presentations, production of posters and a viva.

Coursework can take many forms (based on the practical or theoretical content of the module) including essays, reports, group work,, and in-class tests. Examinations normally take the form of a 2 or 3 hour unseen end-of-semester paper.

Intellectual skills are normally assessed through formal examinations, student presentations and individual viva voce examination. Preparation of laboratory and project reports will also contribute.

C1 will be assessed through computing assignments, C2-6 as parts of the major project assessment, and C4 in the marking of laboratory reports. C5-6: projects will be marked for a critical approach to problem-solving.

A variety of assessment methods are used to assess transferable skills. These include computer laboratory exercises and simulations, oral presentations, written reports, final project. For instance: D1 is assessed in many of the written examination papers, also laboratory and project reports. Laboratory teachers give students considerable feedback on the quality of written laboratory reports, D2; students discuss this feedback with their personal tutors. The effectiveness of teamwork, D3, is assessed as an element in the major project.

E. Academic Regulations

1. Assessment regulations

Assessment regulations laid down in the current edition of the university's Academic Regulations for Taught Programmes apply to the course, subject to any exceptions noted in the text below. The following are the main provisions of the Academic Regulations.

MEng degree programmes consist of modules with a total credit value of 480 credits; a maximum of 30 credits may be at Level S. The degree with Honours requires a minimum of 90 credits at Level 6 (normally including a 30 credit project), and the unclassified degree requires a minimum of 60 credits at Level 6.

In this programme the 480 points are made up of 20 standard modules of 20 points each, a project module of 40 points (level 6) and a Group project module of 40 points (level 7). Each module is separately assessed on the basis of defined learning outcomes, either by an examination, by coursework, or by a mixture of the two.

In order to pass a module a student is required to achieve a mark of at least 40%. Where there is more than one element of assessment (e.g. course work and examination), the student must at least achieve the minimum threshold mark for each element (*normally 30%*) and the weighted average mark for all the elements must be at least 40%.

The programme is made up of 4 levels of 6 modules each. A student who passes all modules in Level 4 will be permitted to progress to Level 5. A student who passes 5 modules may, at the discretion of the Board of Examiners, still be allowed to progress provided his/her performance in the failed module meets the criteria laid down in an approved protocol. A student who is eligible to progress to Level 5 but who is unable to do so may be awarded a CertHE in Engineering.

A student who fails no more than 3 modules at Level 4 may, at the discretion of the Board of Examiners, attempt to make good the failures before the start of the next academic year and, if successful, progress to Level 5. A student who fails more than 3 modules will normally be permitted to make good the failures in the following year; in such a case the student will be required to attend the failed modules and to complete all the assessments associated with these modules. Where a student successfully makes good a failure the mark recorded for the module will be 40%.

A student who passes all modules at Level 5 will be permitted to progress to Level 6. A student who

passes 5 modules may, at the discretion of the Board of Examiners, still be allowed to progress provided his/her performance in the failed module(s) meets the criteria laid down in an approved protocol.

A student who fails no more than 3 modules at Level 5 may, at the discretion of the Board of Examiners, attempt to make good the failures before the start of the next academic year and, if successful, to progress to Level 6. A student who fails more than 3 modules will normally be permitted to make good the failures in the following year; in such a case the student will be required to attend the failed modules and to complete all the assessments associated with these modules. Where a student successfully makes good a failure the mark recorded for the module will be 40%.

A student who is unable to progress from Level 5 to Level 6 but who has passed at least 7 modules at Levels S, 1 and 2 and also benefited from the application of a protocol to one further module may be awarded a CertHE. A student who has passed at least 14 modules at Levels S, 1 and 2 but who is unable to progress to Level 6 may be awarded a DipHE provided s/he has benefited from the application of a protocol to any failed modules.

In order to qualify for the award of a degree with Honours, a student must have passed at least 6 modules at Level 6 and a total of 14 modules from Levels 2 and 3 combined. Subject to these criteria, a student who fails 1 or 2 modules at Level 6 may, at the discretion of the Board of Examiners, still receive the award provided his/her performance in the failed module(s) meets the criteria laid down in an approved protocol.

The classification of degrees with Honours is based on the following bands:

1st Class	70%+
2nd Class (Upper Division)	60 - 69%
2nd Class (Lower Division)	50 - 59%
3rd Class	40 - 49%

The classification is determined by a weighted average of module marks at Levels 2 and 3. The six highest marks among the Level 6 modules, including the double module project, will form a weighted average mark which will contribute 80%. The best eight marks from among the Level 5 modules and the remaining Level 6 modules will form a weighted average mark which will contribute 20%.

In order to qualify for an unclassified degree, a student will be required to study a minimum of 20 modules and to pass at least 18 modules in total, including at least 4 modules at Level 6 and at least 10 modules from Levels 2 and 3 combined. A student who passes 18 or 19 modules will be eligible for the award only if s/he has benefited from the application of an approved protocol to 2 or 1 failed module(s) respectively.

2. Support for students

The University places a high priority on providing support for students. This support is provided by a combination of services, both centrally in the University and locally at the programme level. Much of the support focuses on developing students' skills to enhance their performance on the programme and to facilitate their transition to employment.

2.1 Programme and course level support:

All students are allocated a personal tutor on initial enrolment to the course. The personal tutor is the point of contact for all matters relating to the student's welfare and progress whilst at London South Bank. The personal tutors are supported by year tutors, one for each year of the course. All tutees will meet their tutor at the start of the course.

The primary teaching contact with students, in classrooms, laboratories and workshop, is supported by print and electronic material. For their general understanding of the course, students receive a course guide and a summary of the syllabus; these are updated annually. For each module, the module leader provides a module guide. Subject tutors provide further material as appropriate, including course notes, supporting information and reprints, problem sets, assignment briefs and experiment instructions. Students have access to books in the Perry library, and may obtain copies of past exam papers.

Students on the course benefit from a number of contacts with industry and other outside bodies. A programme of industrial visits will be organised each year with the aim of introducing students to petroleum industry in the UK and enabling them to see petroleum engineering in practice.

All students are encouraged to take the industrial placement option. Students who complete placements report that the experience is invaluable in future employment. A module co-ordinator for sandwich placements will (normally) organise the placement through the teaching staffs' industrial and commercial contacts.

The major projects taken by final year degree students have strong industrial orientation. External speakers from petroleum companies are invited to visit during the year to give students an appreciation of industrial technology and practice and for example the importance of safety in petroleum (oil and gas) production.

2.2 Central support:

The University's Centre for Learning Support and Development (CLSD) aims to support students' learning and personal development. It provides a wide range of personal and academic services to students and works with other departments and faculties in the University to ensure that the services offered meet the needs of students. All services are based on the main campus in Southwark. Some services are provided in the evening. Information about all services is included on the website.

The services on offer include:
Core skills provision – classes, workshops and drop-in sessions to help students develop and enhance their academic reading and writing skills, study skills, basic maths, English language (for students whose first language is not English)

Jobshop – a service to enable students to find part-time, temporary one-off and vacation work while they are studying.

Careers guidance – drop-in sessions and interviews to discuss any aspect of career planning and taking career decisions, discuss CVs or prepare for a job interview.

Personal development and advice – advisory service to discuss personal concerns or difficulties during their programme which might affect their personal development and academic performance; support for students with disabilities including dedicated dyslexia support; chaplaincy to provide

confidential pastoral care.

3. Quality indicators

The BEng course (three first year in common with MEng) has been accredited by the Institution of Chemical Engineers and Energy Institute as meeting the educational requirements for Chartered Engineers at BEng(Hons) level. Accreditation at MEng level will be pursued from the Energy Institute.

A course board, made up of staff and student representatives from each year of the course, meets at least once per term to discuss issues to do with learning and teaching and course developments. The course board is convened and chaired by the course director.

The course is reviewed at an annual meeting of teaching staff. The review takes into account the progression statistics for the individual modules, students' end of module questionnaires and external examiners' comments. On the basis of these, modifications to modules and the course are proposed and where necessary, submitted to the School Academic Standards Committee for approval.

The course is monitored through the annual monitoring report for Chemical and Petroleum Engineering.

F. Entry Requirements

In order to be considered for entry to the programme applicants will be required to have GCSE passes in five subjects at grade C or above including Maths and English. GCSE passes in five subjects including English Language and Mathematics. A typical offer will require 320 UCAS tariff points (including Level 6 Maths or Physical Science); A Level ABB.

International students: English language qualifications for international students: IELTS score of 6.0 or Cambridge Proficiency or Advanced Grade C.

G. Course structure

Module Code	Module Title	Level	Semester	Credit value
ENG_4_401	*Engineering Mathematics and Modelling*	4	1&2	20
ENG_4_402	*Engineering Principles*	4	1	20
ENG_4_403	*Design and Practice*	4	1&2	20
ENG_4_405	*Engineering Computing*	4	2	20
ENG_4_470	*Introduction to Chemical and Petroleum Engineering*	4	1	20
ENG_4_471	*Engineering Principles 2*	4	2	20
ENG_5_410	*Advanced Engineering Mathematics and Modelling*	5	1&2	20
ENG_5_415	*Principles of Control*	5	2	20
ENG_5_472	*Fluids and Separation*	5	1	20
ENG_5_473	*Thermodynamics*	5	1&2	20
ENG_5_481	*Reservoir Engineering and Petroleum Economics*	5	2	20
ENG_5_482	*Geoscience, Well Drilling and Logging*	5	1	20
ENG_6_476	*Process Safety and Environmental*	6	2	20
ENG_6_478	*Advanced Fluids and Control*	6	1	20
ENG_6_484	*Production Engineering*	6	1	20

ENG_6_485	*Reservoir Management*	6	2	20
ENG_6_600	*Design Project*	6	1&2	40
CPE_7_RCH	*Reservoir Characterisation*	7	1	20
CPE_7_AEN	*Advanced Production Engineering*	7	2	20
EEB_7_882	*Technical, Research and Professional*	7	1	20
ENG_7_437	*MEng Group Project*	7	1&2	40
EAB_7_156	*Petroleum Economics & Oil Field Management*	7	2	20

H. Course Modules

Module Code	Module Title	Level	Exam (%)	Course Work (%)	Core/ Optional
ENG_4_401	*Engineering Mathematics and Modelling*	4	50	50	Core
ENG_4_402	*Engineering Principles*	4	60	40	Core
ENG_4_403	*Design and Practice*	4	-	100	Core
ENG_4_405	*Engineering Computing*	4	50	50	Core
ENG_4_470	*Introduction to Chemical and Petroleum Engineering*	4	60	40	Core
ENG_4_471	*Engineering Principles 2*	4	60	40	Core
ENG_5_410	*Advanced Engineering Mathematics and Modelling*	5	50	50	Core
ENG_5_415	*Principles of Control*	5	70	30	Core
ENG_5_472	*Fluids and Separation*	5	60	40	Core
ENG_5_473	*Thermodynamics*	5	40	60	Core
ENG_5_481	*Reservoir Engineering and Petroleum Economics*	5	60	40	Core
ENG_5_482	*Geoscience, Well Drilling and Logging*	5	60	40	Core
ENG_6_476	*Process Safety and Environmental*	6	70	30	Core
ENG_6_478	*Advanced Fluids and Control*	6	60	40	Core
ENG_6_484	*Production Engineering*	6	60	40	Core
ENG_6_485	*Reservoir Management*	6	60	40	Core
ENG_6_600	*Design Project*	6	-	100	Core
CPE_7_RCH	*Reservoir Characterisation*	7	60	40	Core
CPE_7_AEN	*Advanced Production Engineering*	7	70	30	Core
EEB_7_882	*Technical, Research and Professional*	7	-	100	Core
ENG_7_437	*MEng Group Project*	7	-	100	Core
EAB_7_156	*Petroleum Economics & Oil Field Management*	7	-	100	Core

I. Timetable information

Students will be able to access a full timetable for the course from the start of semester and will be notified of any changes.

Module Code	Module Title	Lecture	Tutorial	Practical Laboratories	Computer Laboratories
ENG_4_401	*Engineering Mathematics and Modelling*	x	x		
ENG_4_402	*Engineering Principles*	x	x	x	
ENG_4_403	*Design and Practice*	x			x
ENG_4_405	*Engineering Computing*	x			x
ENG_4_470	*Introduction to Chemical and Petroleum Engineering*	x	x		x
ENG_4_471	*Engineering Principles 2*	x	x	x	
ENG_5_410	*Advanced Engineering Mathematics and Modelling*	x	x		
ENG_5_415	*Principles of Control*	x	x		

ENG_5_472	*Fluids and Separation*	x	x	x	
ENG_5_473	*Thermodynamics*	x	x	x	
ENG_5_481	*Reservoir Engineering and Petroleum Economics*	x	x		
ENG_5_482	*Geoscience, Well Drilling and Logging*	x	x	x	
ENG_6_476	*Process Safety and Environmental*	x	x		
ENG_6_478	*Advanced Fluids and Control*	x	x		
ENG_6_484	*Production Engineering*	x	x		x
ENG_6_485	*Reservoir Management*	x	x		x
ENG_6_600	*Design Project*	x			x
CPE_7_RCH	*Reservoir Characterisation*	x	x		x
CPE_7_AEN	*Advanced Production Engineering*	x	x		x
EEB_7_882	*Technical, Research and Professional*	x	x		
ENG_7_437	*MEng Group Project*	x			x
EAB_7_156	*Petroleum Economics & Oil Field Management*	x	x		x

J. Costs and financial support

Course related costs

- Although all core books can be found in the library or online as free e-books, the student may wish to buy core reading material for each module. There are also costs associated with printing during the course, which are not covered.

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

List of Appendices

Appendix A: Curriculum Map
Appendix B: Educational Framework (undergraduate courses)
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Appendix A: Curriculum Map

This map provides a design aid to help course teams identify where course outcomes are being developed, taught and assessed 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.

Modules			Course outcomes																								
Level	**Title**	**Code**	**A1**	**A2**	**A3**	**A4**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**C1**	**C2**	**C3**	**C4**	**C5**	**C6**	**D1**	**D2**	**D3**	**D4**	**D5**	**D6**	**D7**
4	*Engineering Mathematics and Modelling*	*ENG_4_401*	TAD				TAD														TAD						
4	*Engineering Principles*	*ENG_4_402*	TA				TA										TAD	TA			TAD	TAD	TD				
4	*Design and Practice*	*ENG_4_403*		TAD		TD		TDA	TDA							TDA		TDA			TAD	TAD	TAD				
4	*Engineering Computing*	*ENG_4_405*	TAD				TAD								TAD						TAD	TAD					
4	*Introduction to Chemical and Petroleum Engineering*	*ENG_4_470*	TA		TA		TA	T							TA						TA	TA	TA				
4	*Engineering Principles 2*	*ENG_4_471*	TA				TA										TAD	TA			TAD	TAD	TD				
5	*Advanced Engineering Mathematics and Modelling*	*ENG_5_410*	TAD				TAD								TAD						TAD						
5	*Principles of Control*	*ENG_5_415*	TAD	TAD			TAD	TAD							TAD						TAD	TA					
5	*Fluids and Separation*	*ENG_5_472*	TA	TDA			TA	TA							TA		TA	TA				TA	TDA				
5	*Thermodynamics and Heat Transfer*	*CPE_5_THT*	TA	T			TA	TA									TA					TA	TD				
5	*Reservoir Engineering and Petroleum Economics*	*ENG_5_481*	TDA	TA	T	TA	TA	TA							T	TA					TA	TA				A	

5	*Geoscience, Well Drilling and Logging*	*ENG_5_482*	TDA	D	D	D	TDA	TDA	TDA							DA					TD	TDA			DA	DA	DA
6	*Process Safety and Environmental*	*ENG_6_476*	TDA		TDA	TDA	A	DA	TDA							TDA						TDA				D	D
6	*Advanced Fluids and Control*	*ENG_6_478*	TA	TDA			TA	TDA							TDA							TDA				TA	TDA
6	*Production Engineering*	*ENG_6_484*	TDA	TA			TA	TA	TA						TA						DA			D	D	D	
6	*Reservoir Management*	*ENG_6_485*	TDA	TA		TA	TA	TA							TA								TA	TA	A	DA	DA
6	*Design Project*	*ENG_6_600*		DA	DA	DA	DA	TDA					DA		D					TDA				DA	DA	DA	DA
7	*Reservoir Characterisation*	*CPE_7_RCH*			DA						TDA				TDA	DA		TDA				DA					
7	*Advanced Production Engineering*	*CPE_7_AEN*		TA			TDA	TA	TA						TDA				TDA		DA			D	D	D	D
7	*Technical, Research and Professional*	*EEB_7_882*								TDA	TDA	TDA	TDA	TDA										D	D	D	
7	*MEng Group Project*	*ENG_7_437*		DA	DA	DA	DA	TDA	DA			DA	DA		D	TDA		DA			DA	DA	DA	D	D	D	
7	*Petroleum Economics & Oil Field Management*	*EAB_7_156*				TDA							TDA	TDA	DA	DA				TDA	DA	DA	DA	D	D	D	D

Appendix B: Embedding the Educational Framework for Undergraduate Courses

The Educational Framework at London South Bank University is a set of principles for curriculum design and the wider student experience that articulate our commitment to the highest standards of academic knowledge and understanding applied to the challenges of the wider world.

The Educational Framework reflects our status as University of the Year for Graduate Employment awarded by *The Times and The Sunday Times Good University Guide 2018* and builds on our 125 year history as a civic university committed to fostering social mobility through employability and enterprise, enabling our students to translate academic achievement into career success.

There are four key characteristics of LSBU's distinctive approach to the undergraduate curriculum and student experience:

- Develop students' professional and vocational skills through application in industry-standard facilities
- Develop our students' graduate attributes, self-awareness and behaviours aligned to our EPIIC values
- Integrate opportunities for students to develop their confidence, skills and networks into the curriculum
- Foster close relationships with employers, industry, and Professional, Statutory and Regulatory Bodies that underpin our provision (including the opportunity for placements, internships and professional opportunities)

The dimensions of the Educational Framework for curriculum design are:

- **informed by employer and industry** needs as well as professional, statutory and regulatory body requirements
- **embedded learning development** for all students to scaffold their learning through the curriculum taking into account the specific writing and thinking requirements of the discipline/profession
- **high impact pedagogies** that enable the development of student professional and vocational learning through application in industry-standard or authentic workplace contexts
- **inclusive teaching, learning and assessment** that enables all students to access and engage the course
- **assessment *for* learning** that provides timely and formative feedback

All courses should be designed to support these five dimensions of the Educational Framework. Successful embedding of the Educational Framework requires a systematic approach to course design and delivery that conceptualises the student experience of the curriculum as a whole rather than at modular level and promotes the progressive development of understanding over the entire course. It also builds on a well-established evidence base across the sector for the pedagogic and assessment experiences that contribute to high quality learning.

This appendix to the course specification document enables course teams to evidence how their courses meet minimum expectations, at what level where appropriate, as the basis for embedding the Educational Framework in all undergraduate provision at LSBU.

Dimension of the Educational Framework	Minimum expectations and rationale	How this is achieved in the course
Curricula informed by employer and industry need	Outcomes focus and professional/employer links All LSBU courses will evidence the involvement of external stakeholders in the curriculum design process as well as plan for the participation of employers and/or alumni through guest lectures or Q&A sessions, employer panels, employer-generated case studies or other input of expertise into the delivery of the course provide students with access to current workplace examples and role models. Students should have access to employers and/or alumni in at least one module at level 4.	Design & Practice, links with Energy Institute, Employability Days
Embedded learning development	Support for transition and academic preparedness At least two modules at level 4 should include embedded learning development in the curriculum to support student understanding of, and familiarity with, disciplinary ways of thinking and practising (e.g. analytical thinking, academic writing, critical reading, reflection). Where possible, learning development will be normally integrated into content modules rather than as standalone modules. Other level 4 modules should reference and reinforce the learning development to aid in the transfer of learning.	Design & Practice, Introduction to Chemical & Petroleum Engineering
High impact pedagogies	Group-based learning experiences The capacity to work effectively in teams enhances learning through working with peers and develops student outcomes, including communication, networking and respect for diversity of perspectives relevant to **professionalism** and **inclusivity**. At least one module at level 4 should include an opportunity for group working. Group-based learning can also	Design & Practice, Design Project, MEng Group Project

	be linked to assessment at level 4 if appropriate. Consideration should be given to how students are allocated to groups to foster experience of diverse perspectives and values.	
Inclusive teaching, learning and assessment	<u>Accessible materials, resources and activities</u> All course materials and resources, including course guides, PowerPoint presentations, handouts and Moodle should be provided in an accessible format. For example, font type and size, layout and colour as well as captioning or transcripts for audio-visual materials. Consideration should also be given to accessibility and the availability of alternative formats for reading lists.	All course related material is provided through Moodle and the Perry Library
Assessment *for* learning	<u>Assessment and feedback to support attainment, progression and retention</u> Assessment is recognised as a critical point for at risk students as well as integral to the learning of all students. Formative feedback is essential during transition into university. All first semester modules at level 4 should include a formative or low-stakes summative assessment (e.g. low weighted in final outcome for the module) to provide an early opportunity for students to check progress and receive prompt and useable feedback that can feed-forward into future learning and assessment. Assessment and feedback communicates high expectations and develops a commitment to **excellence**.	All level 4 Modules
High impact pedagogies	<u>Research and enquiry experiences</u> Opportunities for students to undertake small-scale independent enquiry enable students to understand how knowledge is generated and tested in the discipline as well as prepare them to engage in enquiry as a highly sought after outcome of university study. In preparation for an undergraduate dissertation at level 6, courses should provide opportunities for students to develop research skills at level 4 and 5 and should engage with	Design & Practice, Introduction to Chemical & Petroleum Engineering, Design Project, MEng Group Project

	open-ended problems with appropriate support. Research opportunities should build student autonomy and are likely to encourage **creativity** and problem-solving. Dissemination of student research outcomes, for example via posters, presentations and reports with peer review, should also be considered.	
Curricula informed by employer and industry need / Assessment *for* learning	<u>Authentic learning and assessment tasks</u> Live briefs, projects or equivalent authentic workplace learning experiences and/or assessments enable students, for example, to engage with external clients, develop their understanding through situated and experiential learning in real or simulated workplace contexts and deliver outputs to an agreed specification and deadline. Engagement with live briefs creates the opportunity for the development of student outcomes including **excellence**, **professionalism**, **integrity** and **creativity**. A live brief is likely to develop research and enquiry skills and can be linked to assessment if appropriate.	Design & Practice, links with Energy Institute
Inclusive teaching, learning and assessment	<u>Course content and teaching methods acknowledge the diversity of the student cohort</u> An inclusive curriculum incorporates images, examples, case studies and other resources from a broad range of cultural and social views reflecting diversity of the student cohort in terms of, for example, gender, ethnicity, sexuality, religious belief, socio-economic background etc. This commitment to **inclusivity** enables students to recognise themselves and their experiences in the curriculum as well as foster understanding of other viewpoints and identities.	Diversity and inclusivity is acknowledged throughout all modules
Curricula informed by employer and industry need	<u>Work-based learning</u> Opportunities for learning that is relevant to future employment or undertaken in a workplace setting are fundamental to developing student applied knowledge as well as developing work-relevant student outcomes such as networking,	Placement Year

	professionalism and **integrity**. Work-based learning can take the form of work experience, internships or placements as well as, for example, case studies, simulations and role-play in industry-standards settings as relevant to the course. Work-based learning can be linked to assessment if appropriate.	
Embedded learning development	<u>Writing in the disciplines: Alternative formats</u> The development of student awareness, understanding and mastery of the specific thinking and communication practices in the discipline is fundamental to applied subject knowledge. This involves explicitly defining the features of disciplinary thinking and practices, finding opportunities to scaffold student attempts to adopt these ways of thinking and practising and providing opportunities to receive formative feedback on this. A writing in the disciplines approach recognises that writing is not a discrete representation of knowledge but integral to the process of knowing and understanding in the discipline. It is expected that assessment utilises formats that are recognisable and applicable to those working in the profession. For example, project report, presentation, poster, lab or field report, journal or professional article, position paper, case report, handbook, exhibition guide.	Design & Practice, Introduction to Chemical & Petroleum Engineering, Engineering Principles, Fluids & Separation, Thermodynamics, Geoscience Well Drilling Logging, Design Project, Technical Research & Professional, MEng Group Project
High impact pedagogies	<u>Multi-disciplinary, interdisciplinary or interprofessional group-based learning experiences</u> Building on experience of group working at level 4, at level 5 students should be provided with the opportunity to work and manage more complex tasks in groups that work across traditional disciplinary and professional boundaries and reflecting interprofessional work-place settings. Learning in multi- or interdisciplinary groups creates the opportunity for the development of student outcomes including **inclusivity**,	Design & Practice

	communication and networking.	
Assessment *for* learning	<u>Variation of assessment</u> An inclusive approach to curriculum recognises diversity and seeks to create a learning environment that enables equal opportunities for learning for all students and does not give those with a particular prior qualification (e.g. A-level or BTEC) an advantage or disadvantage. An holistic assessment strategy should provide opportunities for all students to be able to demonstrate achievement of learning outcomes in different ways throughout the course. This may be by offering alternate assessment tasks at the same assessment point, for example either a written or oral assessment, or by offering a range of different assessment tasks across the curriculum.	Variation in assessment is provided throughout all modules
Curricula informed by employer and industry need	<u>Career management skills</u> Courses should provide support for the development of career management skills that enable student to be familiar with and understand relevant industries or professions, be able to build on work-related learning opportunities, understand the role of self-appraisal and planning for lifelong learning in career development, develop resilience and manage the career building process. This should be designed to inform the development of **excellence** and **professionalism**.	Links with the Energy Institute, Employability Days
Curricula informed by employer and industry need / Assessment *for* learning / High impact pedagogies	<u>Capstone project/dissertation</u> The level 6 project or dissertation is a critical point for the integration and synthesis of knowledge and skills from across the course. It also provides an important transition into employment if the assessment is authentic, industry-facing or client-driven. It is recommended that this is a capstone experience, bringing together all learning across the course and creates the opportunity for the development of student outcomes including **professionalism**, **integrity** and **creativity**.	Design Project, MEng Group Project

Appendix C: Personal Development Planning

Personal Development Planning (PDP) is a structured process by which an individual reflects upon their own learning, performance and/or achievement and identifies ways in which they might improve themselves academically and more broadly. Course teams are asked to indicate where/how in the course/across the modules this process is supported.

Approach to PDP	Level 1	Level 2	Level 3	Level M
1 Supporting the development and recognition of skills through the personal tutor system.	Personal Tutor scheme embedded in Design & Practice module	Continuation of personal tutor	Continuation of personal tutor	Continuation of personal tutor
2 Supporting the development and recognition of skills in academic modules/modules.	Design & Practice module	Laboratory and computer based modules	Design Project	Group Project
3 Supporting the development and recognition of skills through purpose designed modules/modules.	Design & Practice module	Laboratory and computer based modules	Design Project	Group Project
4 Supporting the development and recognition of skills through research projects and dissertations work.	Design & Practice	Geology and Drilling	Design Project Research.	Group Project research
5 Supporting the development and recognition of career management skills.	Introduction Chemical and Petroleum Engineering	Reservoir and petroleum economics	Design Project Innovation & Enterprise. SPE talks	Group Project. Petroleum Economics and Oil field Mngmt.
6 Supporting the development and recognition of career management skills through work placements or work experience.				Group Project
7 Supporting the development of skills by recognising that they can be developed through extra curricula activities.		Geology and Drilling: Field Trip	SPE Seminars attendance.	
8 Supporting the development of the skills and attitudes as a basis for continuing professional development.			Design Project, SPE talks	Group Project. Petroleum Economics and Oil field Mngmt. SPE talks
9 Other approaches to personal development planning.			Design Project	
10 The means by which self-reflection, evaluation and planned development is supported e.g. electronic or paper-based learning log or diary.	Design & Practice		Design Project	Group Project

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