

The University of Leeds
EXTERNAL EXAMINER'S REPORT

ACADEMIC YEAR: 2018-19 QAT Received 28/06/2019

Part A: General Information

Subject area and awards being examined

Title and Name of Examiner:

Faculty / School of:

Civil Engineering

Subject(s):

Architectural Engineering

Programme(s) / Module(s):

Awards (e.g. BA/BSc/MSc etc):

MEng, BEng

Part B: Comments for the Institution on the Examination Process and Standards

Points of innovation and/or good practice

Please highlight areas of innovation or good practice within the programmes or processes you have been involved with in this box.
The program has an interesting combination of Engineering and Architecture with a mix of conventional engineering work and architectural design studio work.

Enhancements made from the previous year

Please highlight any enhancements made to the programme(s) or processes over the past year in this box.
A number of comments the external examiners requested last year have been implemented this year.

Matters for Urgent Attention

If there are any areas which you think require urgent attention before the programme is offered again please note them in this box
None

For Examiners in the first year of appointment only

1.	Were you provided with an External Examiner Handbook?	Y
2.	Were you provided with copies of previous External Examiners' reports and the School's responses to these?	Y
3.	Were you provided with a External Examiner Mentor?	N

For Examiners completing their term of appointment only

4.	Have you observed improvements in the programme(s) over the period of your appointment?	Y
5.	Has the school responded to comments and recommendations you have made?	Y
6.	Where recommendations have not been implemented, did the school provide clear reasons for this?	Y
7.	Have you acted as an External Examiner Mentor?	N

Please comment on your experience of the programme(s) over the period of your appointment, remarking in particular on changes from year to year and the progressive development and enhancement of the learning and teaching provision, on standards achieved, on marking and assessment and the procedures of the School

Standards

8.	Is the overall programme structure coherent and appropriate for the level of study?	Y
9.	Does the programme structure allow the programme aims and intended learning outcomes to be met?	Y
10.	Are the programme aims and intended learning outcomes commensurate with the level of award?	Y
11.	Did the Aims and ILOs meet the expectations of the national subject benchmark (where relevant)?	Y
12.	Is the programme(s) comparable with similar programmes at other institutions?	Y
<p>Please use this box to explain your overall impression of the programme structure, design, aims and intended learning outcomes.</p> <p>These seem entirely reasonable</p>		
13.	Is the influence of research on the curriculum and learning and teaching clear?	N
<p>Please explain how this is/could be achieved (examples might include: curriculum design informed by current research in the subject; practice informed by research; students undertaking research)</p> <p>Various members of staff may make reference to their own research during lectures but it is not obvious in the material we saw. Because I was looking at the Arch Eng aspects of the course I did not have time to study any of the research project material of those on the purely Engineering course. It is difficult to see where such research would fit in on what is a fairly general course. Probably more relevant is the extent to which the course links in with professional practice, which is handled well on the course.</p>		
14.	Does the programme form part of an Integrated PhD?	N
<p>Please comment on the appropriateness of the programme as training for a PhD:</p> <p>N.A.</p>		
15.	Does the programme include clinical practice components?	N
<p>Please comment on the learning and assessment of practice components of the curriculum here:</p> <p>The course seems well-balanced with plenty of opportunities for them to learn from professional practice and to learn how to work independently, and also in small groups, to achieve appropriate goals.</p>		
16.	Is the programme accredited by a Professional or Statutory Regulatory Body (PSRB)?	Y
<p>Please comment on the value of, and the programme's ability to meet, PSRB requirements here:</p> <p>I understand they are still seeking full ARB accreditation for the architectural component of the course.</p>		

Assessment and Feedback

17.	Does the programme design clearly align intended learning outcomes with assessment?	Y
<p>Please comment on the assessment methods and the appropriateness of these to the ILOs, in particular: the design and structure of the assessment methods, and the arrangements for the marking of modules and the classification of awards; the quality of teaching, learning and assessment methods that may be indicated by student performance.</p>		

The testing and assessment arrangements were appropriate and seemed to be working well. It gives students with different abilities the chance to demonstrate their skills		
18.	Is the design and structure of the assessment methods appropriate to the level of award?	Y
19.	Were students given adequate opportunity to demonstrate their achievement of the programme aims and intended learning outcomes?	Y
<p><i>Please comment on the academic standards demonstrated by the students and, where possible, their performance in relation to students on comparable courses; the strengths and weaknesses of the students as a cohort:</i></p> <p>The standard of the engineering component of the course is comparable with other Masters Courses although the research project component of those courses is replaced by an extensive piece of architectural project work.</p> <p><i>Please use this box to provide any additional comments you would like to make in relation to assessment and feedback:</i></p> <p>The feedback arrangements seemed to be present with several examples of feedback forms shown to us. It was not possible to judge how timely these were or whether the formality of the system slowed-down the process.</p>		

The Progression and Awards Process

20.	Were you provided with guidance relating to the External Examiner's role, powers and responsibilities in the examination process?	Y
21.	Was the progression and award guidance provided sufficient for you to act effectively as an External Examiner?	Y
22.	Did you receive appropriate programme documentation for your area(s) of responsibility?	Y
23.	Did you receive appropriate module documentation for your area(s) of responsibility?	Y
24.	Did you receive full details of marking criteria applicable to your area(s) of responsibility?	Y
25.	Were you provided with all draft examination papers/assessments?	Y
26.	Was the nature and level of the assessment questions appropriate?	Y
27.	Were suitable arrangements made to consider your comments on assessment questions?	Y
28.	Was sufficient assessed work made available to enable you to have confidence in your evaluation of the standard of student work?	Y
29.	Were the examination scripts clearly marked/annotated?	Y
30.	Was the choice of subjects for final year projects and/or dissertations appropriate?	Y
31.	Was the method and standard of assessment appropriate for the final year projects and/or dissertations?	Y
32.	Were the administrative arrangements satisfactory for the whole process, including the operation of the Progression and Awards Board?	Y
33.	Were you able to attend the Progression and Awards Board meeting?	Y
34.	Were you satisfied with the recommendations of the Progression and Awards Board?	Y
35.	Were you satisfied with the way decisions from the School Special Circumstances meeting were communicated to the Progression and Awards Board?	Y
<p><i>Please use this box to provide any additional comments you would like to make on the questions above:</i></p> <p>I am concerned about the large number of resits that are allowed under the Leeds system, which I understand is a University-level policy rather than a Faculty or course-based one. At the final examiners' meeting it was clear that some students are resitting most of their courses. This effectively gives them "two bites at the cherry" and at the</p>		

very least extra time to prepare, which gives them an advantage over more conscientious candidates. I would encourage the university to have a policy of limiting the number of resits allowed, and/or increasing the pass mark required from the resit. This would not, of course, apply to students who took the exam later because of special circumstances. I have also requested that the external examiners be informed of the results of the resit exams when they occur.

I made a number of comments about particular exam questions, and was pleased to receive feedback from the staff concerned and to note that the appropriate changes were made. Thank you.

I was pleased to see that the anonymising strips on the exam scripts were intact in all but 2 scripts (that I saw) - this was something I commented on last year. However, the anonymisation is done using student numbers to which the staff have ready access; a system with randomised "exam numbers" would be preferable.

I was pleased to see that my comments last year about the checking of computer calculations in the Architectural projects has been met by the requirement on the students to include simplified calculations to verify the order of magnitude of the computer output.

I remain concerned about the 3rd year Structural Design examination which this year, as last year, effectively required the students to check a particular structural element against the relevant Eurocode. Structural Design is not about checking whether a solution complies with the code or not; it is much more about deciding between the options available; size, shape, material, construction method, etc. Simply putting numbers into a formula is anyway not the work of an engineer, it is the work of a technician. The Civils used to use this as the discriminant between the two grades of membership; the technician simply uses equations - the engineer understands them. You are educating engineers. In addition, I looked at a number of scripts in this exam and the standard was very disappointing; there is something wrong when the students can't even put the right numbers into the right equation in an open book exam.

In the Architectural Projects the students can produce very professional-looking drawings because of the CAD system to which they have access. But in many of the cases I looked at this was not backed up by the standard of work in their notebooks, which was either very sloppy or appeared to be done in the form of a scrapbook, with sketches made elsewhere pasted in to make it look like a contemporaneous document. I would prefer to see ALL development work carried out in a notebook (with each page dated), and the student encouraged to develop skills in sketching. They will make mistakes, so things will get crossed out, but that is part of the process and should not matter. I would also like to see them receive some assistance in model-making, possibly in the form of provision of tools, guidance, workspace etc, since this is an essential skill of Architects. I am not averse to them using 3D printing for complicated geometrical shapes of limited size, if appropriate, but not as a replacement for general model building.

Other comments

Please use this box if you wish to make any further comments not covered elsewhere on the form

I believe the course achieves a high standard in both teaching and assessment. Most of the comments I have made above are relatively minor and are intended to be helpful and spur further internal discussion. I would like to thank the staff for the courtesy and helpful attitude they showed me and the other external examiners.

27th June 2019

Name of School and Head of School (or nominee)

Title and Name of Examiner:

Subject(s):

Architectural Engineering

Programme(s) / Module(s):

ProgrammesMEng, BEng Integrated Masters programmes in Architectural Engineering;
BEng programmes in Architectural Engineering.Principal modules (2nd, 3rd and final year)CIVE2815 Building Physics 1: Fundamental Principles; CIVE2860 Design Studio 2; CIVE3820
Building Physics 2: Services Design; CIVE3871 Design Studio 3.2; CIVE5815 Building Physics
3; CIVE5840M Design Studio 4.1; CIVE5845M Design Studio 4.2Also invited to comment on*: CIVE1260 Engineering Surveying and Construction Technology;
CIVE1360 Structural Design & Analysis; CIVE1460 Properties of Materials: Water, Soil, Steel and
Timber; CIVE1560 Engineering Mathematics and Modelling 1; CIVE2360 Structural Analysis 1;
CIVE2470 Water Engineering and Geotechnics; CIVE2560 Engineering Mathematics and
Modelling 2; CIVE3165 Structural Design 2; CIVE3510 Foundation Engineering Fundamentals.
* these modules are reviewed by the external examiner for the School's Civil Engineering
programmes

Awards (e.g. BA/BSc/MSc etc):

See above

Title and Name of Responder:

Position*:

Head of School

Faculty / School of:

School of Civil Engineering, Faculty of Engineering and Physical Sciences

Address for communication:

Email:

Telephone:

*If the individual responding to the report is not the Head of School please state their position within the School.

Completing the School response

The completed School response (including the full original report) must be sent directly to the External Examiner. A copy must also be emailed to the Quality Assurance Team at qat@leeds.ac.uk. External Examiners should receive a formal response no later than six weeks after receipt of the original report.

Response to Points of innovation and/or good practice

We thank _____ for _____ supportive comments regarding the programme.

Response to Enhancements made from the previous year

The School thanks _____ for _____ very helpful suggestions. These have resulted in improvements to the Architectural Engineering (and Architecture) programmes.

Response to Matters for Urgent Attention

If any areas have been identified for urgent attention before the programme is offered again please provide a specific response to them here:

Not applicable – no matters for urgent attention were raised by _____

Response to questions 1-7 (and related comments)

Schools may provide a general response; however, where Examiners raise specific points these must be addressed individually:

The School again thanks _____ for very helpful comments and suggestions in the meetings with the teaching team and in _____ summing up at the end of the examination board meeting.

Standards

Response to questions 8 to 16 (and related comments)

Schools may provide a general response; however, where Examiners raise specific points these must be addressed individually:

Again the School thanks _____ for helpful feedback and support.
Regarding _____ answer to question 16 and _____ comment: “I understand they are still seeking full ARB accreditation for the architectural component of the course”, it should be noted that the Architectural Engineering programmes are all accredited by the Joint Board of Moderators (JBM). The School is NOT seeking ARB Part 1 prescription for the Architectural Engineering programmes. We did, however, achieve ARB Part 1 prescription of the School’s MEng, BEng Integrated Masters programme in Architecture in September 2018.

Assessment and Feedback

Response to questions 17 to 19 (and related comments)

Schools may provide a general response; however, where Examiners raise specific points these must be addressed individually:

The School thanks _____ for positive comments on assessment.

We acknowledge the comment by _____ on replacing the individual research project component with an extensive piece of architectural project work. We wish to highlight that we expect students to satisfy the learning objectives of an individual research project as part of the two final year Design Studio modules (CIVE5840M; 30 credits and CIVE5845M; 50 credits). These modules are not purely architectural in that they integrate architecture, structural engineering and building physics via concept and proof of concept designs. These modules can be viewed as hybrid individual research and design projects. They also include an element of group work in the site analysis and precedent study exercises. The teaching team has developed these during the last 10 year period with the enthusiastic encouragement of our previous external examiners (_____ and _____) as well as external tutors and visiting professors from industry.

Regarding feedback, all formal written feedback is provided within 3 weeks of the submission deadline. In addition, in Design Studio 4.1 students present their work to the class in two review exercises. Verbal feedback from the supervising staff, a guest commentator from industry and the student audience is provided. Written formative feedback plus an indicative grade is then emailed to each student, personally, during the evening of the following day. In addition to the formal written feedback provided by the staff, the students are scheduled to meet with supervising staff (and tutors from industry) at least once a week (twice a week in the case of Design Studio 4.1 and 4.2) – they present their work using their sketchbooks in these tutorial sessions where they are given direct and immediate feedback and further guidance on their work, as appropriate. This approach is used for the 2nd, 3rd and final year Design Studio exercises.

The Progression and Awards Process

Response to questions 20-35 (and related comments)

Schools may provide a general response; however, where Examiners raise specific points these must be addressed individually:

The School offers the following responses to the specific comments raised by _____

Comment: *I am concerned about the large number of resits that are allowed under the Leeds system, which I understand is a University-level policy rather than a Faculty or course-based one. At the final examiners' meeting it was clear that some students are resitting most of their courses. This effectively gives them "two bites at the cherry" and at the very least extra time to prepare, which gives them an advantage over more conscientious candidates. I would encourage the university to have a policy of limiting the number of resits allowed, and/or increasing the pass mark required from the resit. This would not, of course, apply to students who took the exam later because of special circumstances. I have also requested that the external examiners be informed of the results of the resit exams when they occur.*

School’s Response:

We note _____ concerns and will raise these, via this report, at the 28th November 2019 meeting of the School Taught Student Education Committee (STSEC). On the same subject, it will also be of interest to _____

to know that, at its recent JBM accreditation visit (held on 14th & 15th November 2019), the School was informed that it will be required to implement the Engineering Council's November 2018 rules for "Compensation and condonement" at the earliest opportunity. These have been clarified in the Engineering Council's Guidance Note on Compensation and Condonement" which was approved by the EC's Registration Standards Committee (RSC) on 31st July 2019. This action is likely to address many of the concerns raised by . It is probably worth noting that all schools running programmes accredited by professional engineering bodies acting under licence from the EC such as the JBM, will be required to implement these rules.

Comment: *I was pleased to see that the anonymising strips on the exam scripts were intact in all but 2 scripts (that I saw) - this was something I commented on last year. However, the anonymisation is done using student numbers to which the staff have ready access; a system with randomised "exam numbers" would be preferable.*

School's response:

The School follows university policy regarding anonymised marking. We note comments and will relay them to the Faculty via the 28th November 2019 meeting of the School Taught Student Education Committee (STSEC)

Comment: *I remain concerned about the 3rd year Structural Design examination which this year, as last year, effectively required the students to check a particular structural element against the relevant Eurocode. Structural Design is not about checking whether a solution complies with the code or not; it is much more about deciding between the options available; size, shape, material, construction method, etc. Simply putting numbers into a formula is anyway not the work of an engineer, it is the work of a technician. The Civils used to use this as the discriminant between the two grades of membership; the technician simply uses equations - the engineer understands them. You are educating engineers. In addition, I looked at a number of scripts in this exam and the standard was very disappointing; there is something wrong when the students can't even put the right numbers into the right equation in an open book exam.*

School's response:

This issue was raised and considered in some detail at a single item agenda meeting of the School's Structures Teaching Group (STG) held on 18th July 2019. The STG considered Prof Burgoyne's comments in the light of design teaching across all of the School's undergraduate programmes. The teaching of design forms a very important, prominent "backbone" of all the School's taught undergraduate programmes. All civil engineering students complete a series of open-ended Integrated Design Project (IDP) modules throughout their 4 years of study. The Architectural Engineering and Architecture students complete a series of Design Studio (DS) modules – like the IDP modules, these are also very open-ended in nature and pose an increasing level of challenge as the students progress from year 1 to year 4. The IDP and DS modules place a great deal of emphasis on creativity, decision-making and the need to exercise engineering judgement as well as student-led and independent learning. The modules are summarised in the table below:

	Civil Engineering programmes	Architectural & Architectural Engineering programmes
1 st year (FHEQ level 4)	IDP1/DS1 (CIVE1665; 20 credits)	
2 nd year (FHEQ level 5)	IDP2 (CIVE2660; 20 credits)	DS2 (CIVE2860; 20 credits)
3 rd year (FHEQ level 6)	IDP3 (CIVE3860; 30 credits)	DS3.1 (CIVE3870; 30 credits) * DS3.2 (CIVE3871; 30 credits)
4 th year (FHEQ level 7)	IDP4 (CIVE5851; 30 credits)	DS4.1 (CIVE5840M; 30 credits) DS4.2 (CIVE5845M; 50 credits)

* Architecture students only

The later (i.e. 3rd year and 4th year) IDP or DS modules also meet many of the EC's "Accreditation of Higher Education Programmes (AHEP)" learning outcomes. These are identical to those cited in the QAA's Engineering Benchmark statement. Hence it is the IDP or DS modules that are used by the School to demonstrate that our students have met the academic requirements for chartered engineer status rather than modules such as CIVE3165.

Several modules have been designed and built into the curriculum to support or underpin the IDP and DS modules. Some help students to develop an understanding of many of the fundamental principles of engineering (and, in some cases, architecture), others also provide students with an introduction to some important performance aspects of design through investigation of the commonly considered limit states. This practical context is enhanced through

timely references to the various parts of the Eurocode. The undergraduate curriculum currently includes a number of modules of this latter type including CIVE2150 Structural Design 1, CIVE3165 Structural Design 2 and, to a lesser extent, CIVE3510 Foundation Engineering Fundamentals.

Hence, our students are required to develop solutions to open-ended engineering problems in the IDP or DS modules listed in the table above. It is expected that they will apply their knowledge and understanding of materials such as soil, concrete, masonry, timber and structural steel gained in the underpinning modules in their IDP or DS design challenges.

The STG understands _____ concerns regarding the use of the word “Design” in the module title for CIVE3165. It is, however, a word that is used very commonly by many other Schools or Departments running JBM-accredited programmes (including many Russell Group universities) even though the aspects of design covered in the module are quite different to those addressed in the School’s IDP and DS modules. The STG has reviewed the module descriptors and considered them to be sufficiently different to those for the IDP and DS modules to avoid misleading or causing undue confusion to our students. We hope that _____ notes the findings of the STG and considers them to be both reasonable and acceptable.

Comment: *In the Architectural Projects the students can produce very professional-looking drawings because of the CAD system to which they have access. But in many of the cases I looked at this was not backed up by the standard of work in their notebooks, which was either very sloppy or appeared to be done in the form of a scrapbook, with sketches made elsewhere pasted in to make it look like a contemporaneous document. I would prefer to see ALL development work carried out in a notebook (with each page dated), and the student encouraged to develop skills in sketching. They will make mistakes, so things will get crossed out, but that is part of the process and should not matter. I would also like to see them receive some assistance in model-making, possibly in the form of provision of tools, guidance, workspace etc, since this is an essential skill of Architects. I am not averse to them using 3D printing for complicated geometrical shapes of limited size, if appropriate, but not as a replacement for general model building.*

School’s response:

Sketchbooks: In the Design Studio modules students are required to use A3 sketchbooks to demonstrate how they develop their design concepts and ideas including technical details. The sketchbooks also serve as a useful repository for design data, precedent study information, technical details, etc. Students are encouraged to explore and develop a wide range of concepts and possible design ideas in their sketchbooks which they use in the scheduled tutorial meetings with the supervisory staff and external tutors. Such work is not assessed (i.e. it is not allocated a mark) but it is used by the staff assessing the student’s work as evidence of design development. The sketchbooks can sometimes be useful to illustrate how problems have been solved or how concepts were initially formed and subsequently developed where such information is not in evidence from the work submitted for assessment. As the work in the sketchbooks is not formally assessed the academic staff consider that it is not necessary to be particularly prescriptive as to how the work in the sketchbooks should be presented or structured. During the course of the scheduled tutorial meetings, should the need arise, staff have ample opportunity to advise the students if their work presented in the sketchbooks is not sufficiently clear or is lacking in content.

Model making: The School has provided the students with a tiled floor model making area in the Design Studio. This is equipped with modelling mats, benches with vices, a limited supply of materials and a cabinet containing small modelling tools. Although students are encouraged to avoid laser cutting or 3-D printing, such techniques are permitted where appropriate (e.g. the construction of the main model for Design Studio 3.1). These facilities currently appear to meet the needs of our students.

Other comments

Response to items included in the ‘Other Comments’ section of the report

On behalf of the School, I would like to thank _____ for very positive, helpful and supportive comments. I am pleased to advise _____ that discussions held with the academic staff were considered by all to be very constructive and helpful.