Remote Assessment:

Creating, Correcting and preventing Collusion

Chair: Aimee Byrne, TU Dublin

Speakers:

Opening remarks: Úna Parsons, Academic Society Chair

- Irene Hayden / Anne Morrissey / Úna Parsons / Michelle Looby, Academic Society Findings
- Louise Lynch, TU Dublin, *'Overview of Remote Assessment Options for Engineering'*
- Stephen Burnley, The Open University, *'Industrial-scale remote assessment – experiences from the Open University'*
- Paul Young, DCU, '*Online Examination of Open Problems for Engineering Mechanics'*
- Brian Coll, IT Sligo, *'How students cheat - designing your assessments to reduce plagiarism, collusion and copying'*

Followed by discussion

https://www.engineersireland.ie/Professionals/Communities-Groups/Societies/Academic

Survey Findings

Impact of COVID 19 on engineering teaching, assessment and laboratories in Ireland

Dr Anne Morrissey
Associate Professor
DCU

Úna Parsons
Head of Faculty,
CEng FIEI
IT Sligo

Irene Hayden
Lecturer,
CEng MIEI
GMIT

Michelle Looby
Senior Lecturer,
CEng MIEI
TU Dublin

ENGINEERS IRELAND
ACADEMIC SOCIETY

Survey findings

These are the survey findings in relation to **remote assessment: creating, correcting and preventing collusion**

The survey was conducted in the latter half of August and reflects **three parts to the survey regarding higher education engineering practices**:

1. Pre March 2020
2. Post March 2020 during Lockdown
3. Planning for the next academic year 2020-2021

Survey Responses

19 educational institutions across the island of Ireland contributed

CIT	UCC	DCU	TU Dublin
NUIG	GMIT	IT SLIGO	LYIT
IADT DUN LAOGHAIRE	DUNDALK IT	QUB	SOUTHERN REGIONAL COLLEGE
IT TRALEE	ESB NETWORKS TRAINING CENTRE	LIT	UL
IT CARLOW	WIT	ATHLONE IT	

Survey Responses

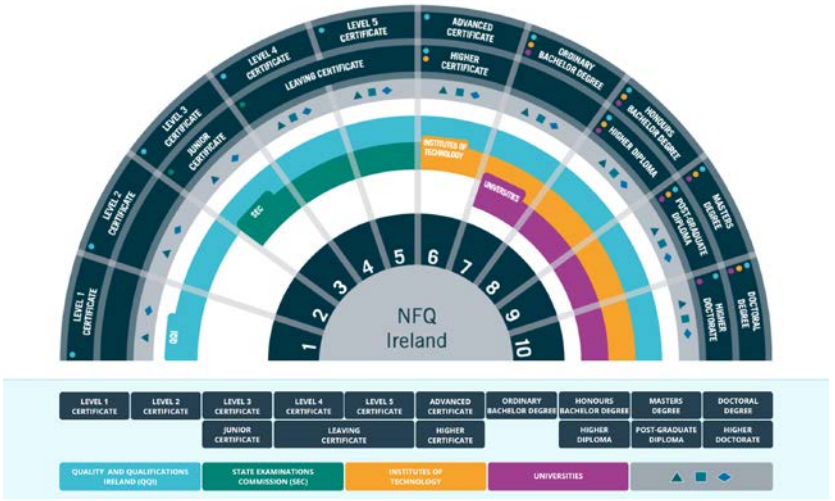
Participant break down:

73% academic lecturing staff

27% Head of Faculty, School or Department

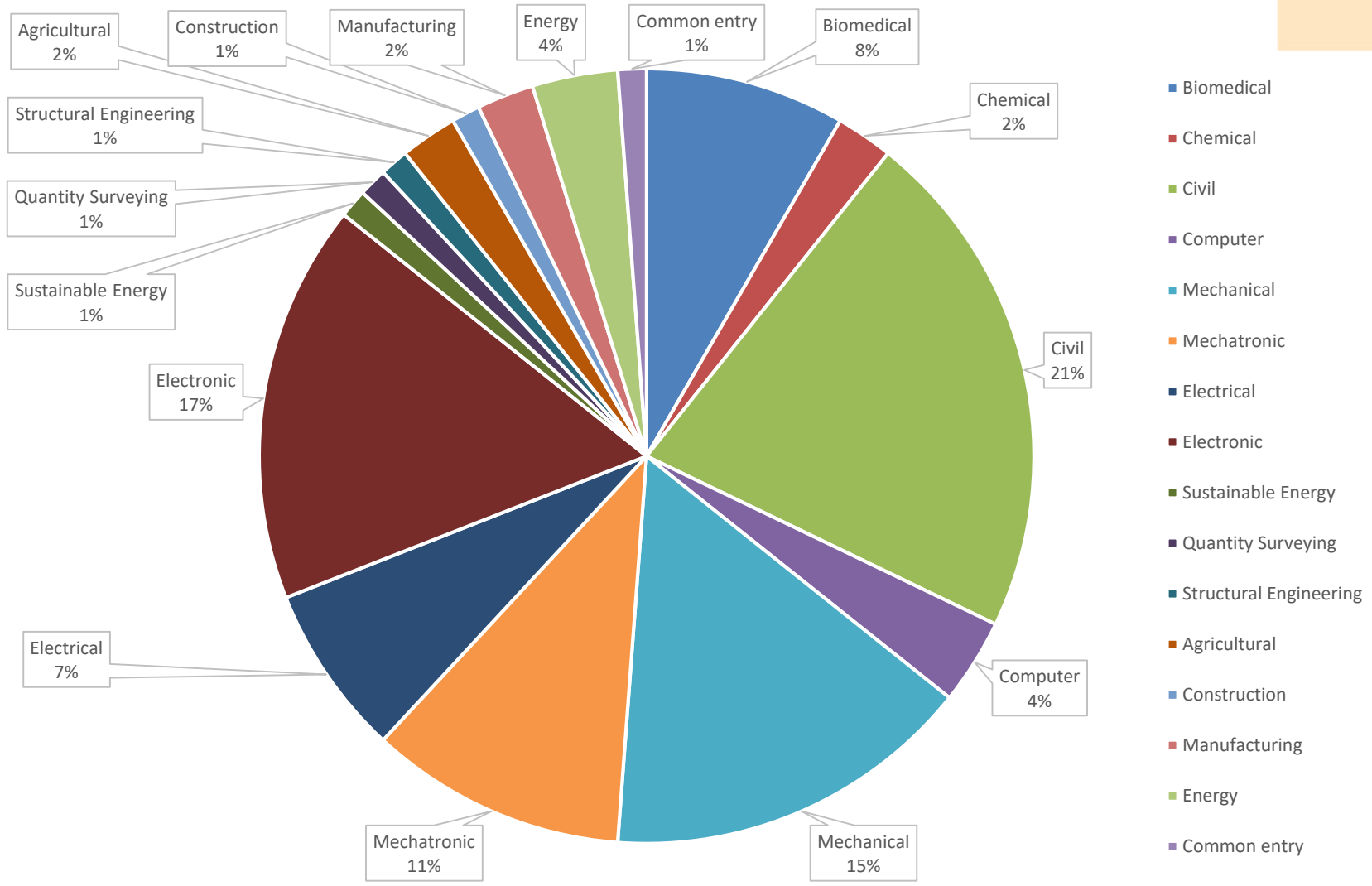
Irish National Framework of Qualifications (NFQ) represented:

Level 6, 7, 8 and 9

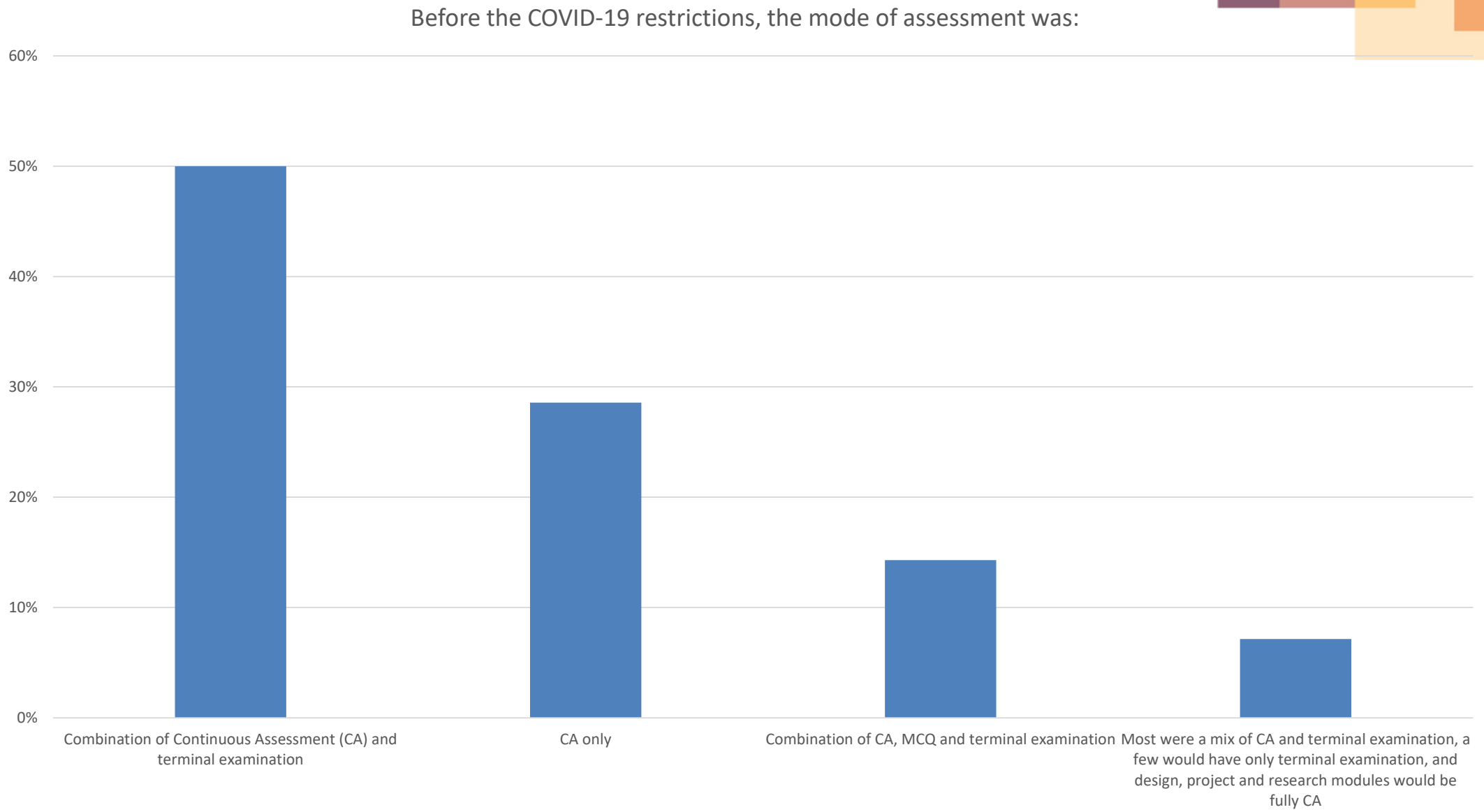


Engineering Disciplines

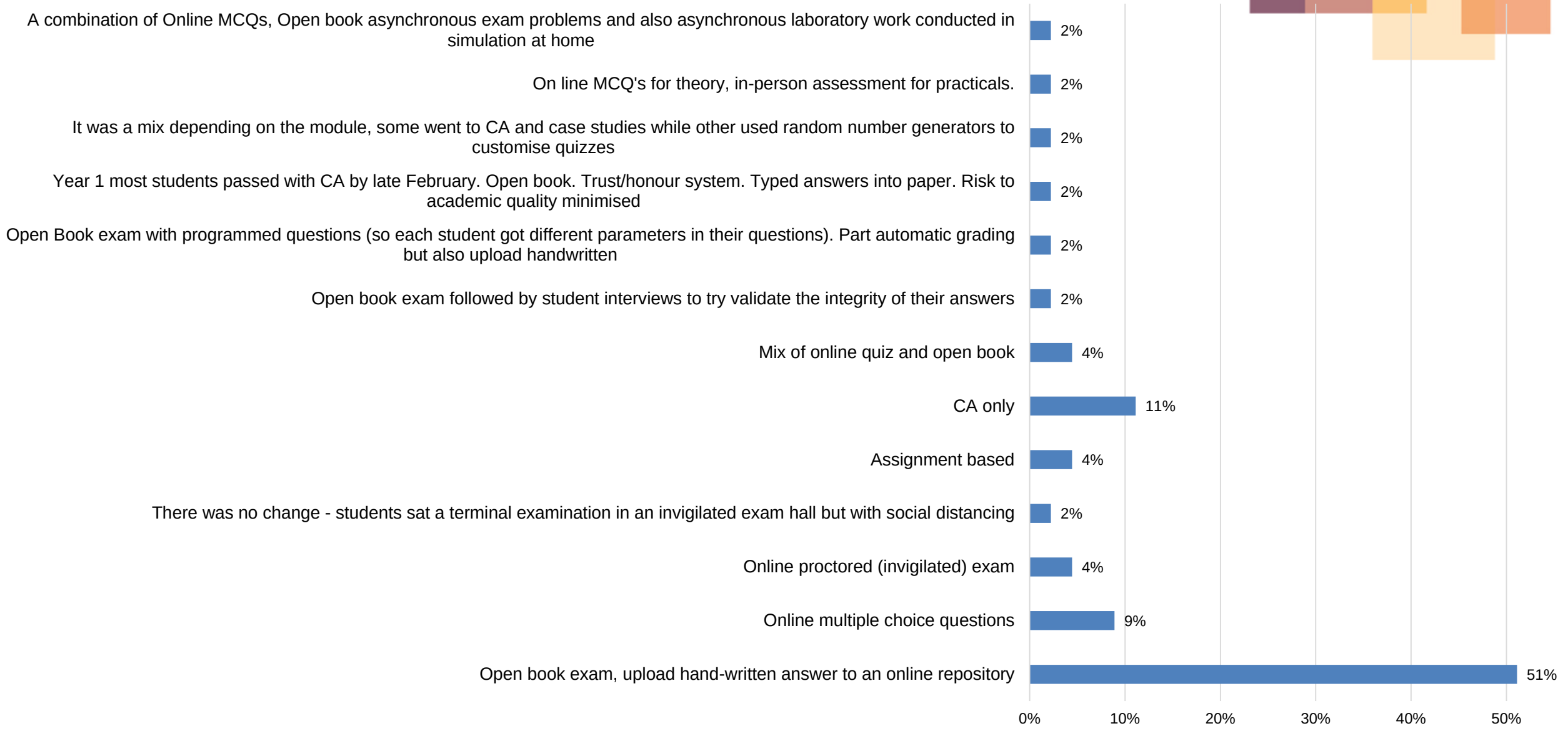
16 engineering disciplines are represented



Pre Lockdown

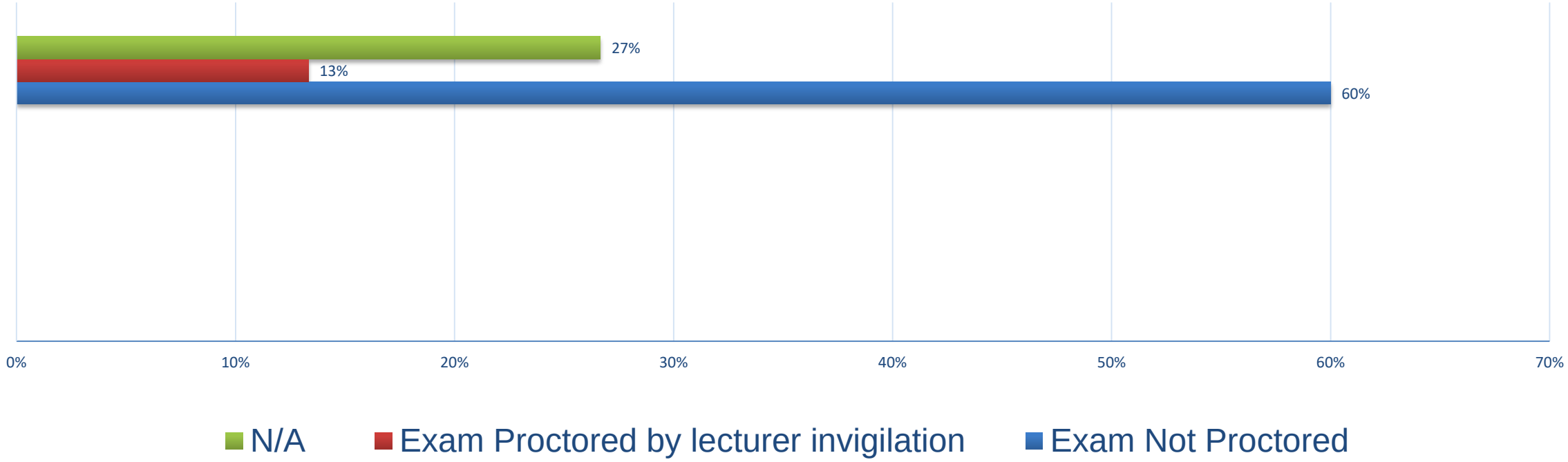


During lockdown, the terminal examination in an exam hall was changed to:



During Lockdown

If an online proctored (invigilated) exam was used, which system was used?



- *1 in 4 Heads of Department report using a proctoring system such as Menti, MyForms used with MS Teams*

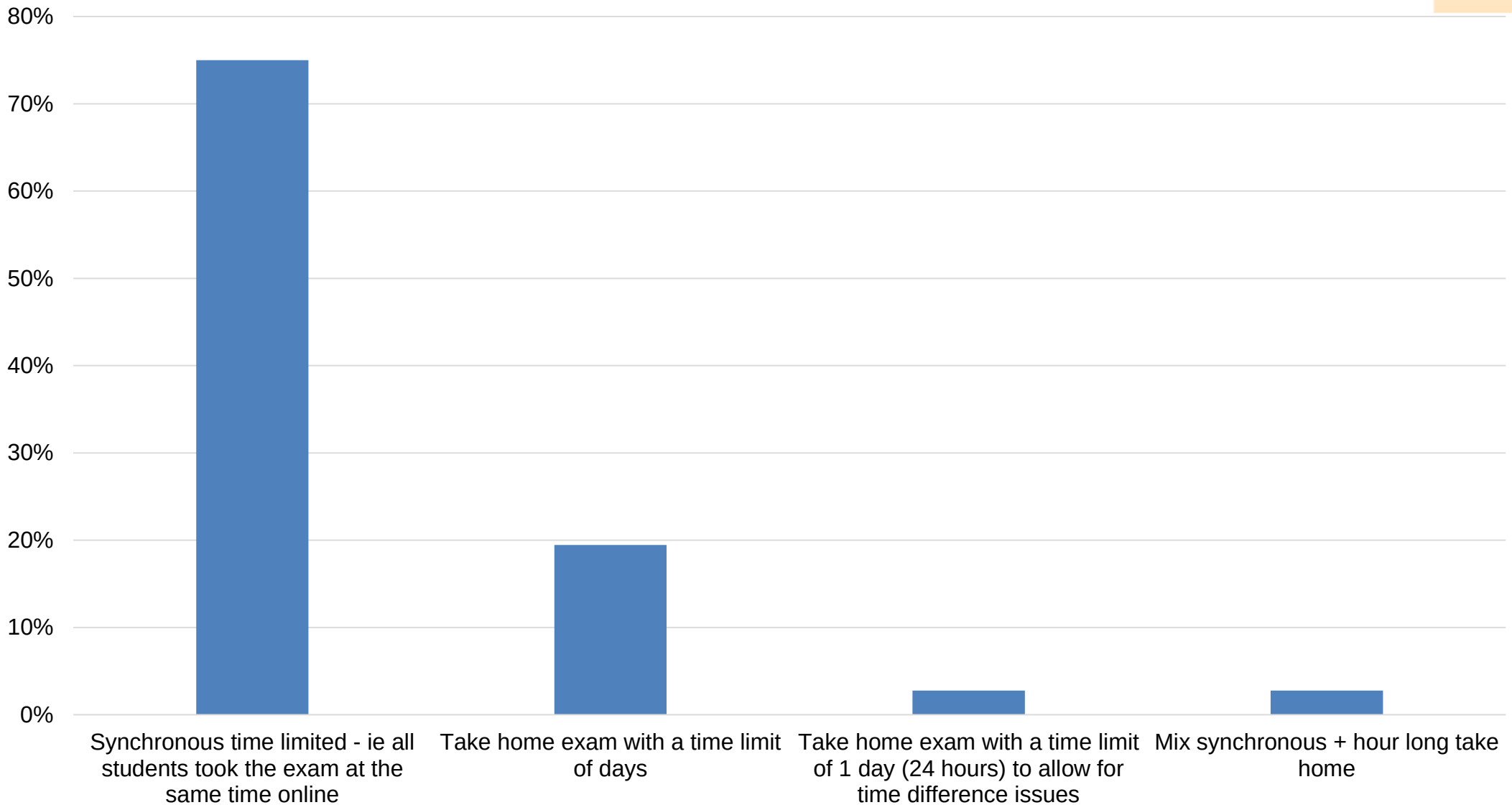
During Lockdown

Reasons given by Head of Department, School or Faculty for not using proctoring software:

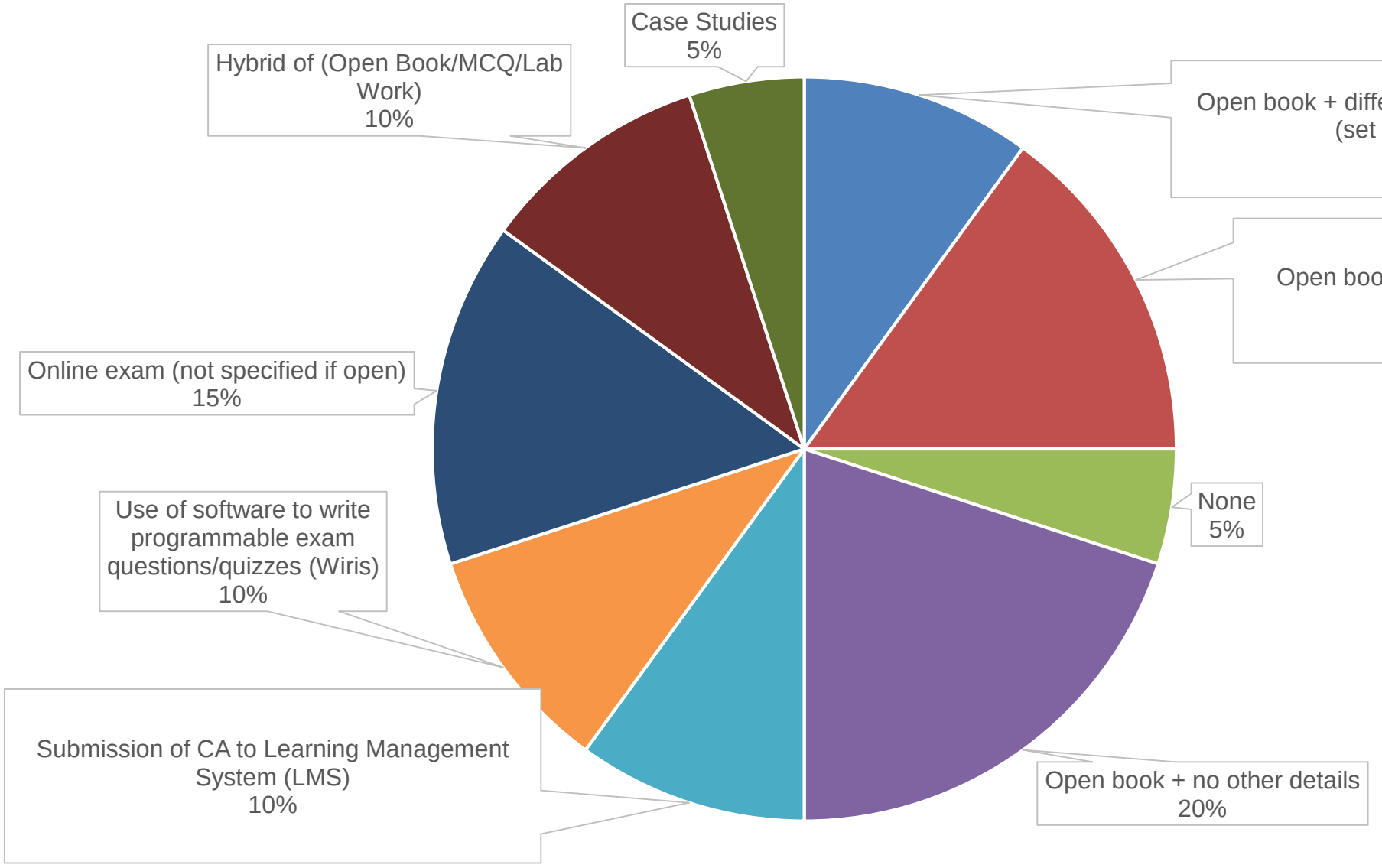
- *Not technically possible, most students in this part of the world do not have broadband capacity to handle the existing systems in their family homes (quite a few had only 4G via their own mobile phones)*
- *Not used due to financial reasons*
- *We normally use Examate but this shut down during COVID*

During Lockdown

Timing Arrangements for Alternative Examination

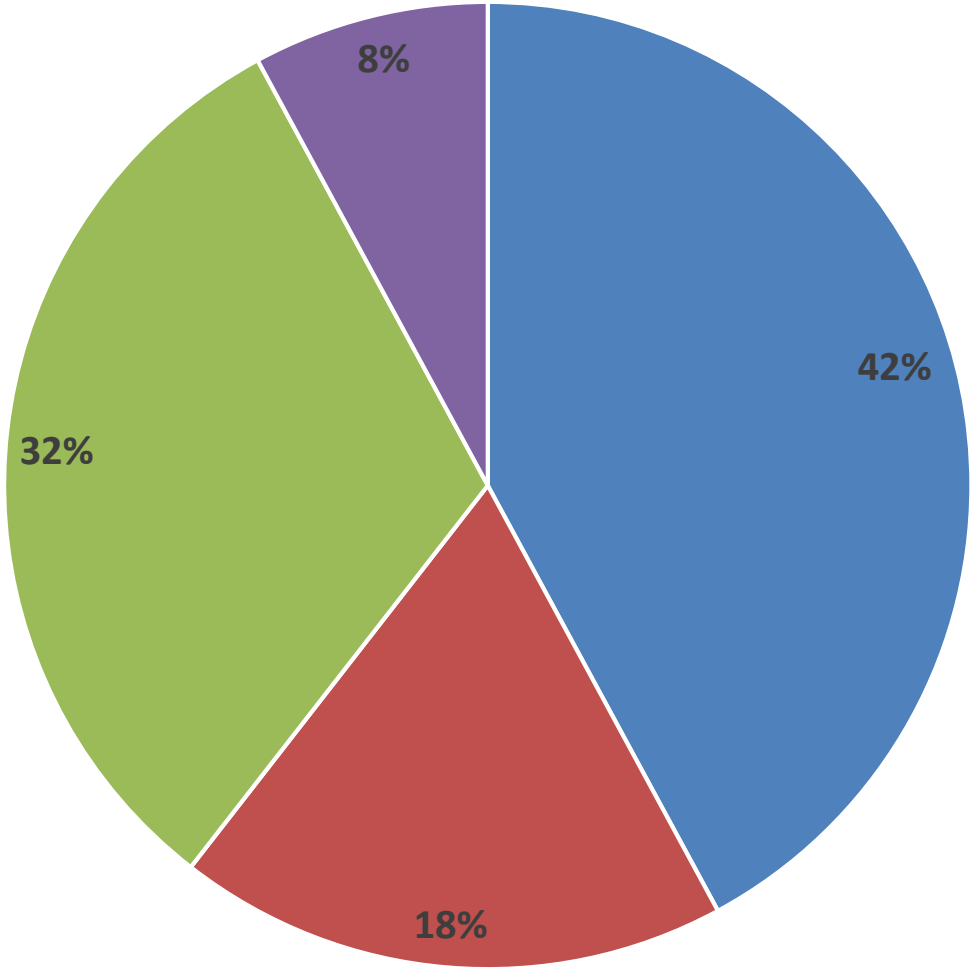


Method of assessment found most useful in assessing students remotely



80% exam-based example of remote assessment reported

Future Planning

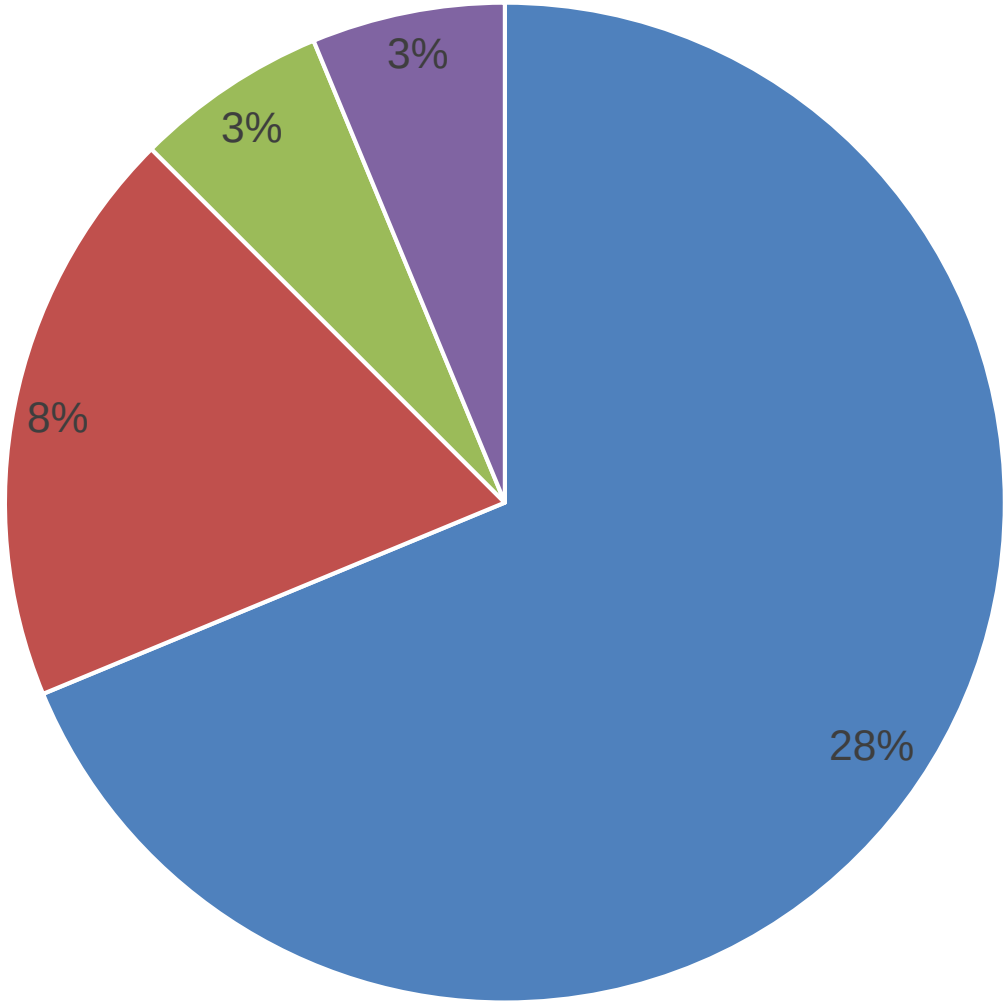


- Four predominant themes were collected in relation to future planning of assessments:

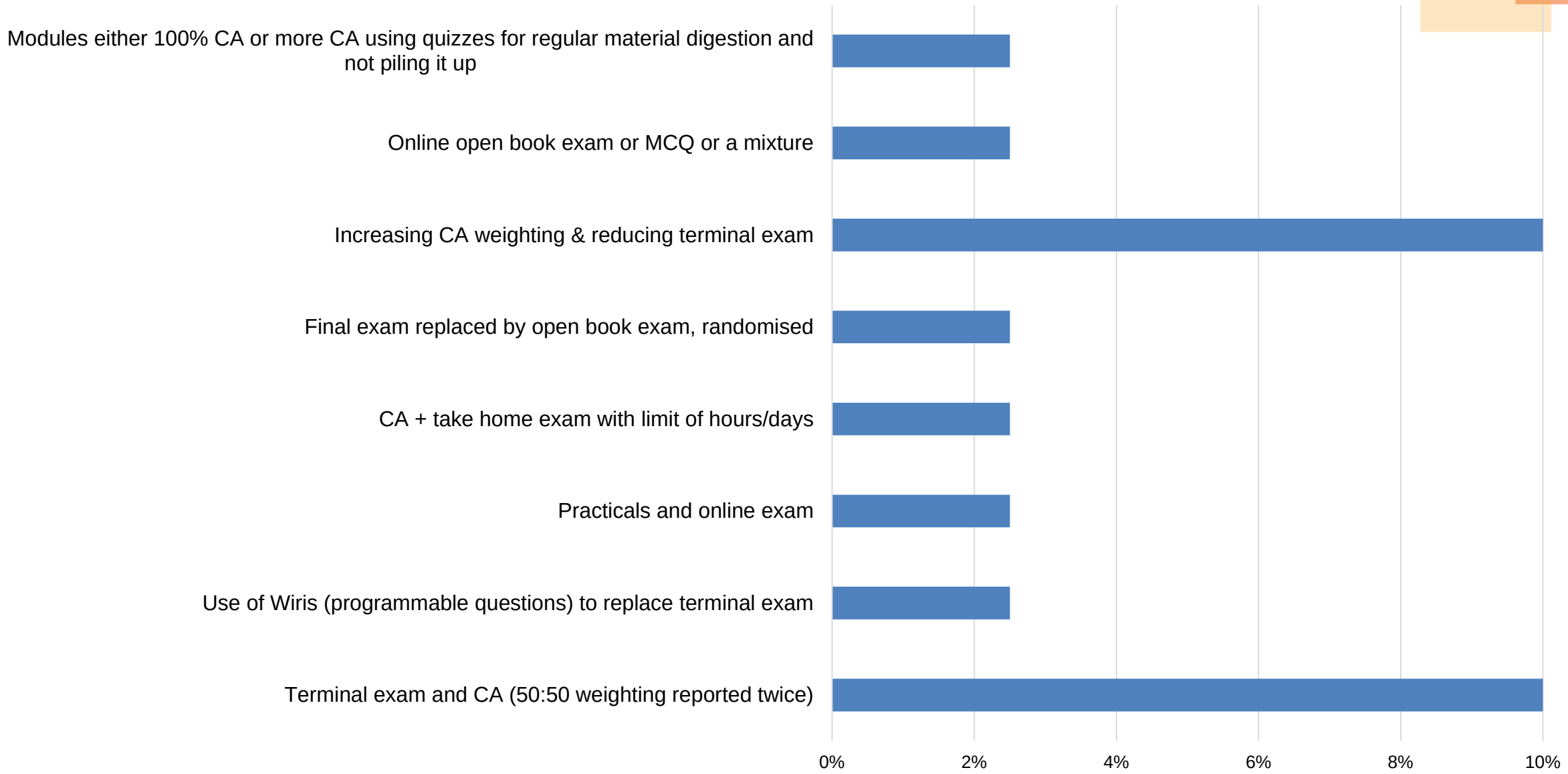
1. A 100% terminal exam strategy (8%)
2. **A 100% continuous assessment strategy (42%)**
3. **A mixed-mode assessment strategy (32%)**
4. Data reported no change to predetermined plans (18%)

- We will focus on the **predominant two themes**
- These changes to assessment strategies and possibly curriculum design as a result **may significantly alter the outlook of the next generation of Engineers**

100% Continuous assessment strategy



Mixed-mode assessment strategy



Conclusion

- Including **a mixture of examination options** is a predominant pedagogical approach in engineering education
- Using **technology** can help in the assessment process
- **Increased quality assurance** observed through new methods of assessment
- Observations on **emerging engineering pedagogical evolution**
- **Outstanding quality assurance** issues have yet to be addressed

OLLSCOIL TEICNEOLAÍOCHTA BHAILE ÁTHA CLIATH
TECHNOLOGICAL UNIVERSITY DUBLIN

Overview of Remote Assessment Options for Engineering

Louise Lynch

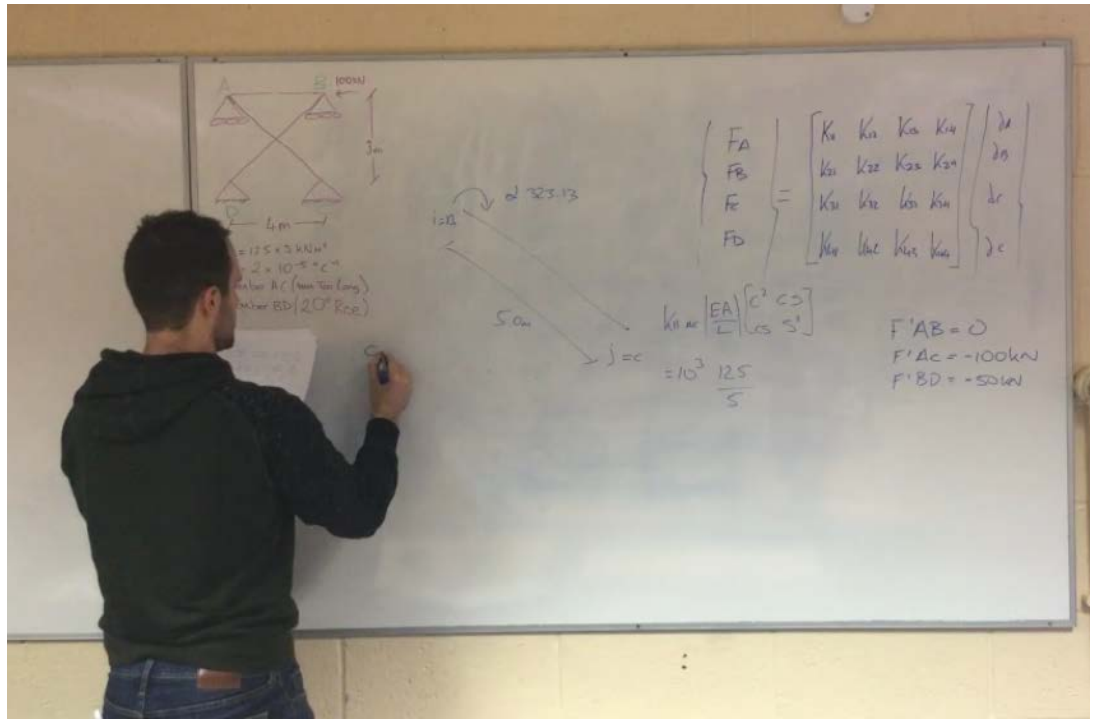
Options to be discussed

Video Assignments

Online Quizzes

Video Assignments

- Final Year Structural Analysis students
- Working in groups
  - Needed to agree on calculation.
- Recording themselves explaining how they solved the exam paper question.
- Recording submitted.



- Deeper understanding required to explain how to carry out procedure.
- Build on presentation graduate attributes.

VLE Quizzes

- VLE (Brightspace)

Section

True or False Question (T/F)

Multiple Choice Question (MC)

Multi-Select Question (M-S)

Written Response Question (WR)

Short Answer Question (SA)

Multi-Short Answer Question (MSA)

Fill in the Blanks Question (FIB)

Matching Question (MAT)

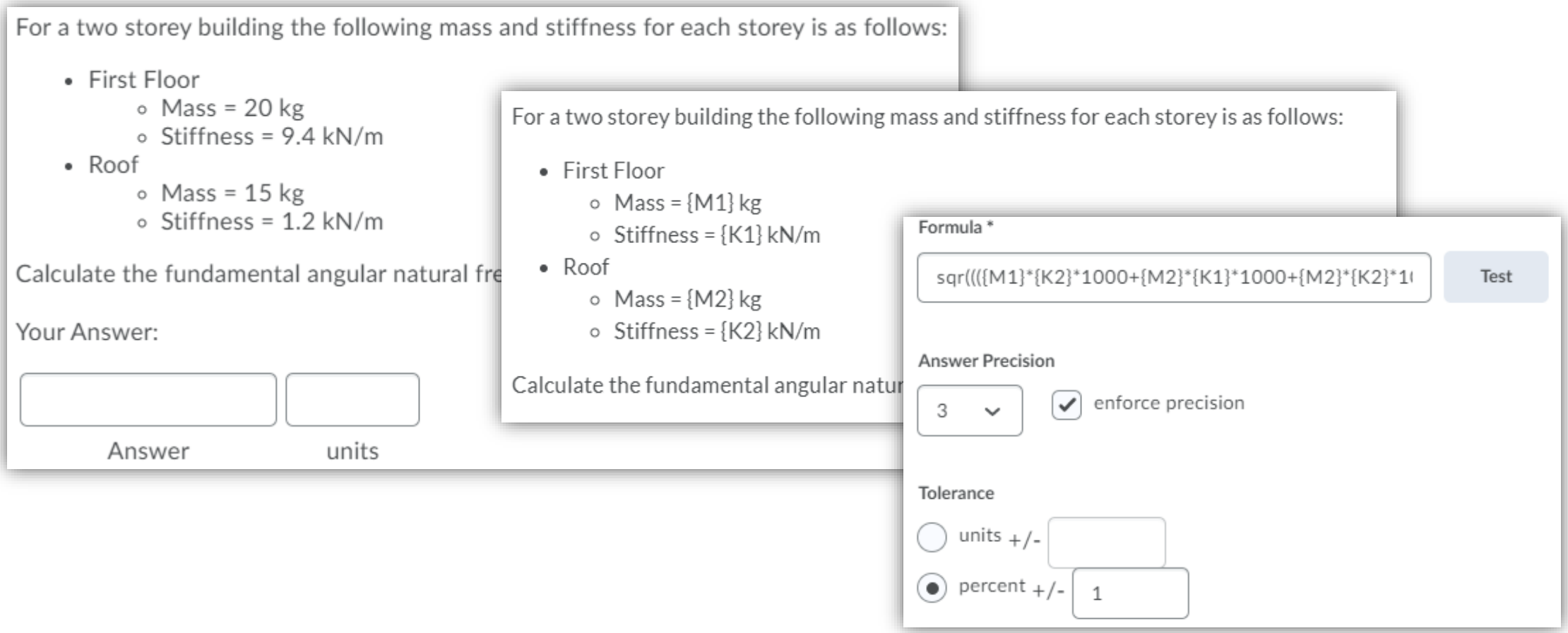
Ordering Question (ORD)

Arithmetic Question (2+2)

Significant Figures (x10)

Likert Question (LIK)

VLE Quizzes – Arithmetic Questions



VLE Quizzes

- Advantages
  - Arithmetic Questions
    - Set variables within range
    - Write Solution using variables
    - Unit Input allowed
    - Margin of Error allowed
  - Various other question types
  - Linked to VLE
    - Question statistics
    - Automatic grading into VLE gradebook
- Disadvantages
  - Arithmetic Questions
    - No conversion of units
    - Only 1 input option for single set of variables
    - Solution all from initial set of variables

201920 End of Semester Exam

- Brightspace Quiz utilised
- Random numbering not possible due to number of parts to Questions
- Multiple versions of Quiz produced to reduce collaboration
- Answer input into relevant spaces in quiz
- Followed by hand calculations submitted separately, as evidence of working

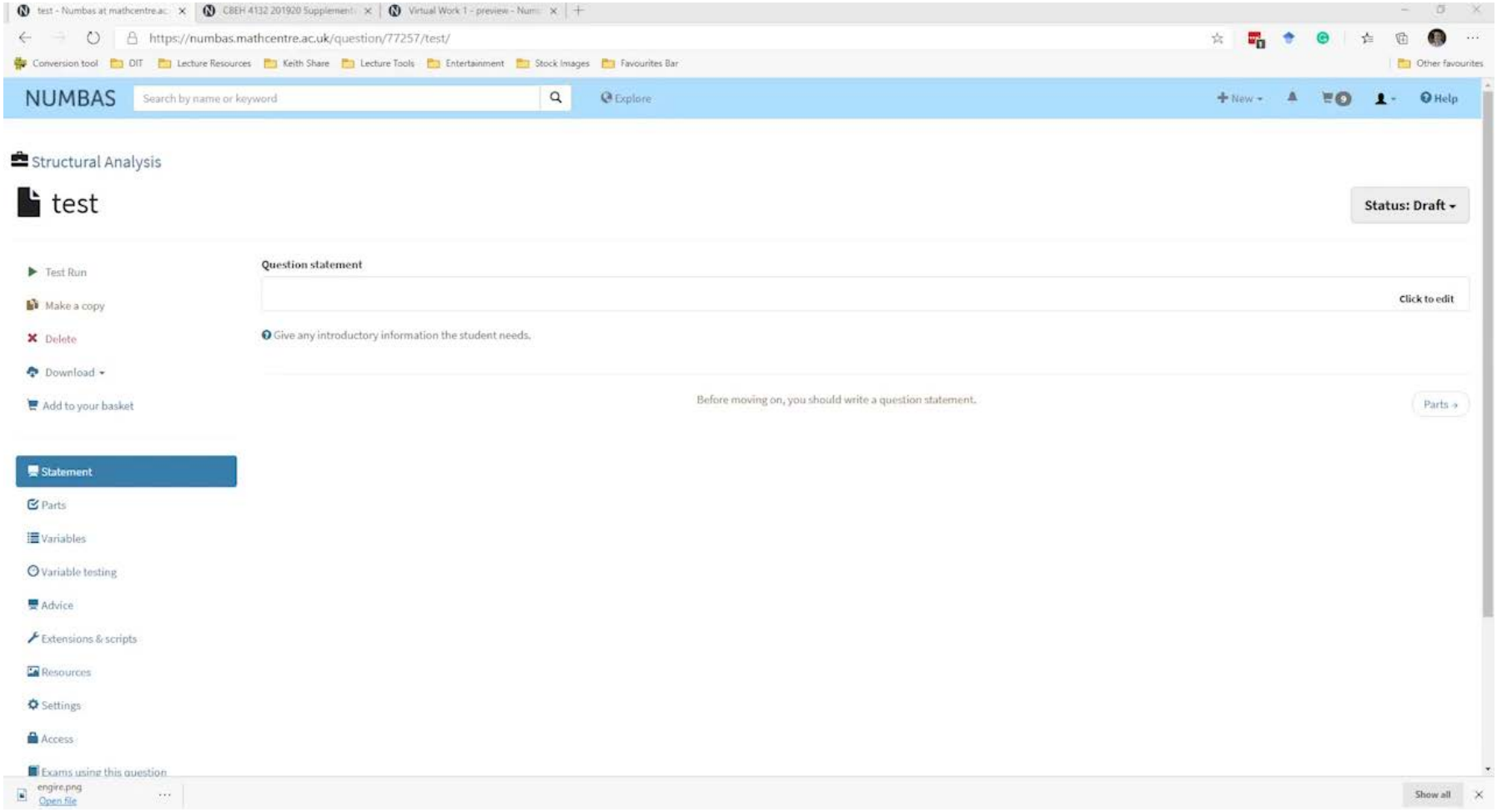
Numbas

- Open-source e-assessment system
- Developed by Newcastle University
- Uses SCORM packages incorporated into VLE.
  - VLE integration option available (LTI)
- Uses Javascript
  - Minimal knowledge required for most questions

Numbas

- Advantage
  - Complex mathematical questions are possible
  - Various answers based on one set of variables are possible
  - Integration with VLE is possible
  - Great for formative assessment
- Disadvantages
  - Lecturer can not automatically see numbers student was provided
  - Not currently suited to written descriptive questions.
  - Sometimes will not automatically populate marks in VLE's. (??)

Numbas


https://numbas.mathcentre.ac.uk/question/77257/test/
NUMBAS
Search by name or keyword
Explore
New
Help
Structural Analysis
test
Status: Draft
Test Run
Make a copy
Delete
Download
Add to your basket
Question statement
Click to edit
Give any introductory information the student needs.
Before moving on, you should write a question statement.
Parts
Statement
Parts
Variables
Variable testing
Advice
Extensions & scripts
Resources
Settings
Access
Exams using this question
engine.png
Open file
Show all

Virtual Work 1 - Numbas at mat | Virtual Work 1 - preview - Numb

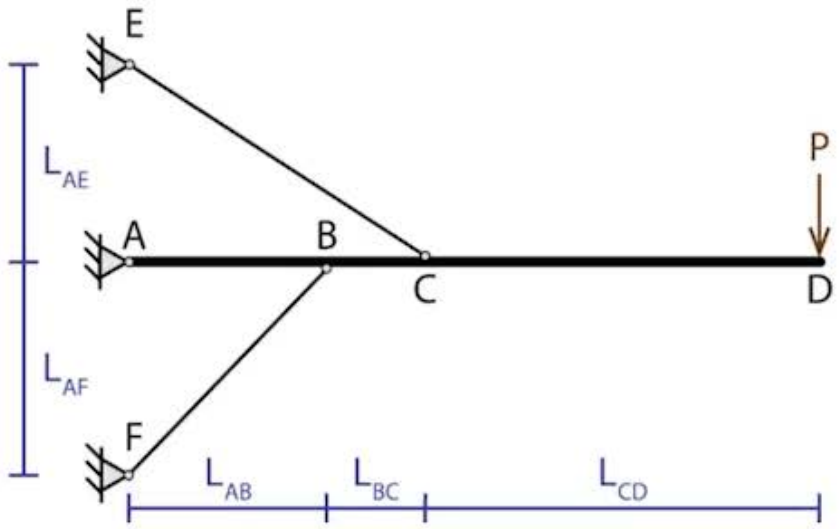
https://numbas.mathcentre.ac.uk/question/67697/virtual-work-1/preview/

Conversion tool | DIT | Lecture Resources | Keith Share | Lecture Tools | Entertainment | Stock Images | Favourites Bar | Other favourites

PREVIEW of Virtual Work 1 in Structural Analysis

 Edit Download Share

For the frame shown, using Virtual Work, calculate the following.



Note: Neglect the axial effects in ABCD.

Take the following values:

- $L_{AB} = 2.5$ m.
- $L_{BC} = 0.8$ m.
- $L_{CD} = 2.5$ m.
- $L_{AE} = 1.2$ m.
- $L_{AF} = 2.8$ m.
- $P = 120$ kN.

Assume the following:

- $E = 205$ GPa for the frame and axial only members.

Virtual Work 1 - Numbas at mat | Virtual Work 1 - preview - Numb

https://numbas.mathcentre.ac.uk/question/67697/virtual-work-1/

Conversion tool | DIT | Lecture Resources | Keith Share | Lecture Tools | Entertainment | Stock Images | Favourites Bar | Other favourites

NUMBAS | Search by name or keyword | Explore | New | 9 | Help

Structural Analysis

Virtual Work 1

Status: Ready to use

- Test Run
- Make a copy
- Delete
- Download
- Add to your basket

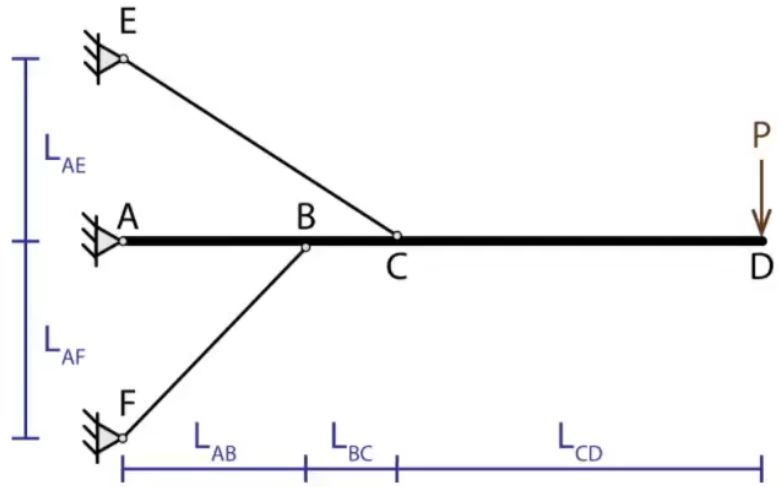
- Statement
- Parts
- Variables
- Variable testing
- Advice
- Extensions & scripts
- Resources
- Settings
- Access
- Exams using this question

Question statement

Edit | Insert | View | Format | Table | Tools

Formats

For the frame shown, using Virtual Work, calculate the following.



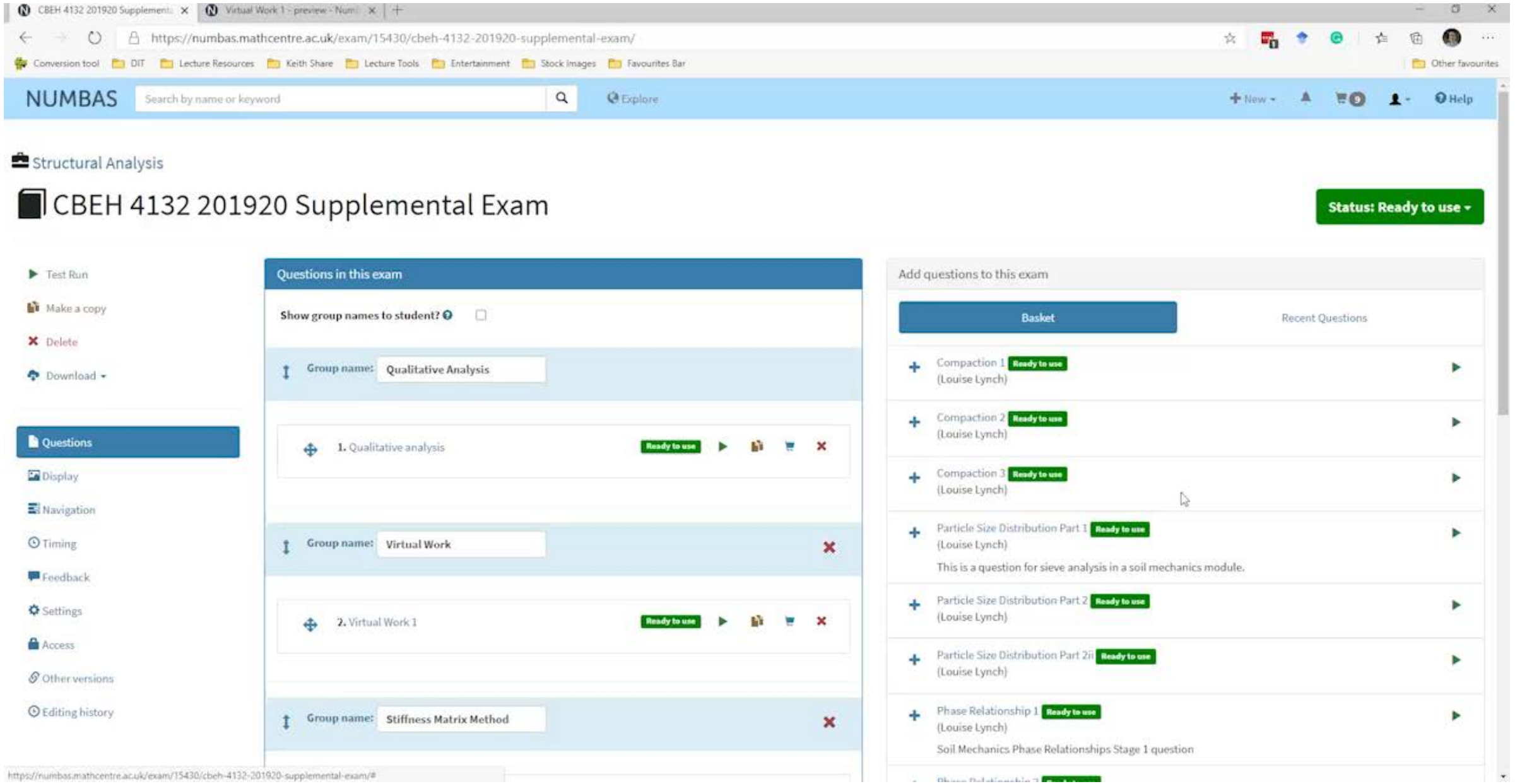
Note: Neglect the axial effects in ABCD.

Take the following values:

- L_{AB} = {Lab} m.

engire.png
Open file

Show all


CBEH 4132 201920 Supplement
Virtual Work 1 - preview - Numb
https://numbas.mathcentre.ac.uk/exam/15430/cbeh-4132-201920-supplemental-exam/
Conversion tool
DIT
Lecture Resources
Keith Share
Lecture Tools
Entertainment
Stock Images
Favourites Bar
Other favourites
NUMBAS
Search by name or keyword
Explore
New
Help
Structural Analysis
CBEH 4132 201920 Supplemental Exam
Status: Ready to use
Test Run
Make a copy
Delete
Download
Questions
Display
Navigation
Timing
Feedback
Settings
Access
Other versions
Editing history
Questions in this exam
Show group names to student?
Group name: Qualitative Analysis
1. Qualitative analysis
Ready to use
Group name: Virtual Work
2. Virtual Work 1
Ready to use
Group name: Stiffness Matrix Method
Add questions to this exam
Basket
Recent Questions
Compaction 1 Ready to use
(Louise Lynch)
Compaction 2 Ready to use
(Louise Lynch)
Compaction 3 Ready to use
(Louise Lynch)
Particle Size Distribution Part 1 Ready to use
(Louise Lynch)
This is a question for sieve analysis in a soil mechanics module.
Particle Size Distribution Part 2 Ready to use
(Louise Lynch)
Particle Size Distribution Part 2i Ready to use
(Louise Lynch)
Phase Relationship 1 Ready to use
(Louise Lynch)
Soil Mechanics Phase Relationships Stage 1 question
https://numbas.mathcentre.ac.uk/exam/15430/cbeh-4132-201920-supplemental-exam/#

OLLSCOIL TEICNEOLAÍOCHTA BHAILE ÁTHA CLIATH
TECHNOLOGICAL UNIVERSITY DUBLIN

For further information please contact:

Email: louise.lynch@tudublin.ie

Industrial-scale remote assessment – experiences from the Open University

Dr Stephen Burnley CEng FIChemE FCIWM SFHEA

School of Engineering and Innovation – The Open University- United Kingdom

Stephen.burnley@open.ac.uk

The Open University – a few facts and figures

The UK's largest University with over 160,000 students (c63,000 FTEs).

We have 4,200 students in Ireland (c1,400 FTEs).

Our largest population module – "Introducing the Social Sciences" has 3,800 students.

Engineering student numbers range from 1,100 students on the first introductory module down to around 25 on the MEng final group project.

Each student is guided by their tutor (Associate Lecturer) who will typically look after 20 students per module.

Some tutors only teach on one module per year while others teach on many modules.

Assessment in engineering

For each 30-credit (300 hours) module there will be typically:

2 or 3 summative coursework assignments;

formative computer-based assessments;

A summative end of module assessment (mini project or other synoptic assessment);

or an unseen examination.

Even before COVID we have seen a general move away from unseen examinations.

Since spring 2020, all unseen exams have been replaced with time-limited assignments.

The assessment system – Coursework assignments

Submitted electronically through the OU's in-house system (would probably use "Turnitin" or a Moodle-based system if starting from scratch).

A marking scheme is provided by the central Module Team.

Marked by the student's tutor with the provision of detailed feedback (for some students, this feedback represents the only bespoke teaching support that they receive).

A sample of each tutor's scripts is monitored by the Module Chair to ensure consistency of marking and quality of feedback.

All scripts are checked against "Turnitin" and "Copycatch" and the reports generated are sent to the Module Chair.

Cases of plagiarism (or bad academic practice) are handled by one person at the School level. This ensures a consistent approach across all modules and programmes and allows serial offenders to be identified.

The assessment system – End of module assessments

Scripts are submitted electronically through the same system as the coursework.

The tutors inspect all their students' scripts for verification purposes.

"Turnitin" and "Copycatch" checks are carried out.

Marking is done by either another tutor or a central staff member (depending on student numbers) using a marking scheme produced by the Module Team.

Before marking begins all markers assess the same three scripts and these are reviewed by markers and the Module Chair to help achieve consistency and resolve any issues.

Marks are submitted to an electronic system along with comments to the Examination Board and (limited) feedback to the student.

Some (or all) scripts are independently double marked.

Wide variations between double markers are resolved by either a conversation between the markers or by third marking by the Module Chair.

In advance of the Examination Board, a "standardisation" exercise is undertaken where the marks of lenient or severe markers can be adjusted across the board.

Assessing practical work

This was the subject of a previous Engineers Ireland webinar, but in brief;

Pre COVID – All engineering students attended two week-long residential schools to teach and assess practical skills and group working.

2020 – Schools were paused.

2021 – All students will be sent a “Home Experiment Kit”. Experiments will be done at home and reports submitted through the assignment system.

2022 – (Hopefully) return to residential schools.

Also we have the “Open STEM Laboratory” http://stem.open.ac.uk/study/openstem-labs

Advice from one Open University academic

On a positive note:

Remote assessment can work well;

Quality checks and systems are essential – and give confidence to the External Examiner, accrediting bodies and national regulators;

Permits both assessment ***of*** learning and assessment ***for*** learning;

The system is transparent and auditable;

Can be better for students with some types of disability/illness;

The HE sector as a whole doesn't have much choice today.

Advice from one Open University academic

Potential drawbacks:

High set-up time and cost commitments;

Needs the support of all the module/qualification team members (academic, admin and support) and at School, Faculty and University level;

Needs highly robust IT systems and support – systems can't be allowed to crash on submission day;

Problems with students who have limited internet access (military, secure hospital patients, prisoners etc);

Despite the verification processes, there can be issues confirming the authorship of a piece of work.

In Conclusion

Remote assessment can provide an efficient means of assessing learning and of providing teaching.

It can incorporate traceable audit trails and QA processes.

Reliable IT systems are essential.

It requires commitment and resources across the University.

It is not a cheap alterative to conventional assessment.

High set-up costs probably mean it is better suited to large student numbers and as a permanent system.

Online Quizzes and Open Problem Questions

Associate Professor Paul Young
School of Mechanical and Manufacturing Engineering

What is a Loop Quiz?

- Container activity into which you can import a set of questions
- Set-up of quiz is completely independent of the questions
- Overall course mark for activity
- Behaviour of questions controlled by quiz set up
- Presentation of questions controlled by quiz set up

Question Types

- Questions can be of differing types
  - Word based (fill in the blanks, select, Drag and Drop)
  - Image based (DnD)
  - Numerical (values with tolerance bands)
  - Mathematical (manipulation, multi-stage, units etc)
  - Essay
- Automatic allocation of marks
  - Marks for a question are set in the quiz
- Automation of feedback
  - Controlled in set-up of quiz

Feedback to Students

- Built in to questions at editing time
- Needs to be thought through carefully to provide guidance for next attempt
- Can be used for tutorial style approach with feedback relevant to student entries
- Use depends on Quiz settings, so building it into the question does not mean that it cannot be used for summative as well as formative assessment
- Mark is also a feedback

Grading

- Internal to question itself
- Weighted in each quiz
- Grading is automatic to give a question breakdown and overall quiz mark
- Re-grading:
  - Always review the grading of a quiz to ensure that all marks are given where possible
  - Issues found can be addressed by editing the question evaluation
  - A dry-run can be undertaken where attempts are reviewed, but the marks not applied

Semester 1 2020 Exam Question

Question **2**

Not yet answered

Marked out of 10.00

Flag question

Edit question

Q 1(c) **[10 Marks]**

For the trace shown in Figure 1, determine the stiffness and damping given that the mass of the system has been measured as 400 grams.

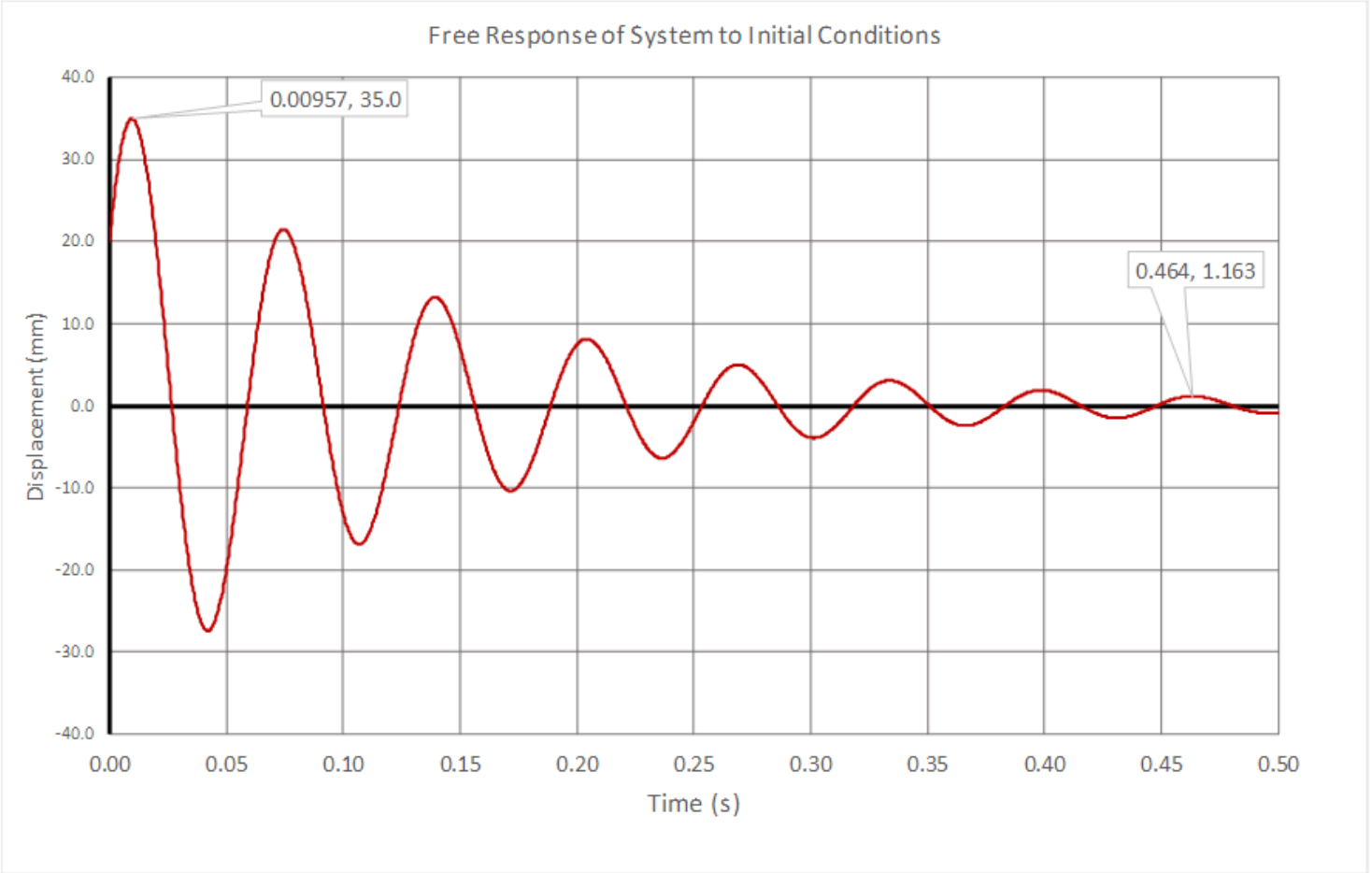


Figure 1

How it’s done

Question **2**

Not yet answered

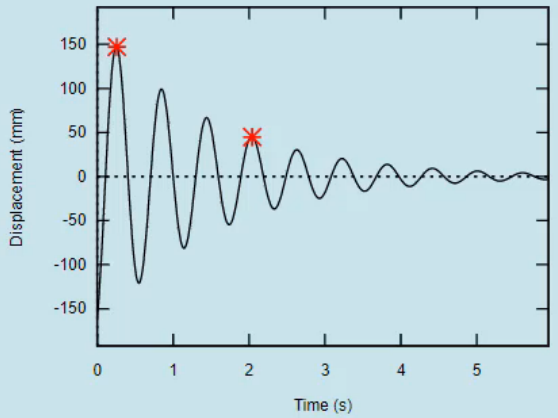
Marked out of 10.00

Flag question

Edit question

Tidy STACK question tool | Question tests & deployed variants

The free-vibration response of spring-mass-dashpot system was recorded as shown in the figure below, with the asterisks indicating the peaks at $(0.2582, 147.0)$ and $(2.042, 44.77)$.



Given that the Mass is 9 kg, determine the:

Frequency of oscillation: [ ] Hz

Damping Ratio: [ ]

Natural Frequency: [ ] Hz

Stiffness: [ ] N/m

If the initial displacement and velocity were: -160 mm and 0.847 m/s. Determine the amplitude and phase of the response equation $x(t) = Ae^{-\zeta\omega_n t}sin(\omega_d t + \phi)$

Amplitude: [ ] mm

Phase: [ ] radians

The free-vibration response of spring-mass-dashpot system was recorded as shown in the figure below, with the asterisks indicating the peaks at \[({@t_A@},{@x_A@})\] and \[({@t_B@},{@x_B@})\].

{@plot([Disp,[discrete,pts1,pts2]],[x,0,T_10],[y,-ymax, ymax], [xlabel, "Time (s)"], [ylabel, "Displacement (mm)"],[style, lines, points], [color, black, red],[point_type, asterisk])@}

Given that the Mass is \[{@Mass@}\] kg, determine the:

Frequency of oscillation: [[input:ans1]] Hz [[validation:ans1]]

Damping Ratio: [[input:ans2]] [[validation:ans2]]

Natural Frequency: [[input:ans3]] Hz [[validation:ans3]]

Stiffness: [[input:ans4]] N/m [[validation:ans4]]

If the initial displacement and velocity were: \[{@x_0@}\] mm and \[{@float(v_0/1000)@}\] m/s. Determine the amplitude and phase of the response equation \[x(t)=A e^{-\zeta\omega_n t} sin(\omega_d t + \phi)\]

Amplitude: [[input:ans5]] mm [[validation:ans5]]

Phase: [[input:ans6]] radians [[validation:ans6]]

Some guiding is needed?

The sailor who with his baggage has a mass of 133 kg is standing on joint F of the truss based gangplank which is hinged to the ship at E and rolls on the quay at A.

All the members of the truss have the same length, 1014 mm and the gangplank is at an angle of 24° to the horizontal.

ΣF_h : GC*cos(t+%pi/3)+GF*cos(t)+BC*cos(t) =0

Your last answer was interpreted as follows:

$$GC \cdot \cos\left(t + \frac{\pi}{3}\right) + GF \cdot \cos(t) + BC \cdot \cos(t)$$

The variables found in your answer were: $[BC, GC, GF, t]$

ΣF_v : GC*sin(t+%pi/3)+GF*sin(t)+BC*sin(t)+FA =0

Your last answer was interpreted as follows:

$$GC \cdot \sin\left(t + \frac{\pi}{3}\right) + GF \cdot \sin(t) + BC \cdot \sin(t) + FA$$

The variables found in your answer were: $[BC, FA, GC, GF, t]$

ΣM_G : -(BC*a*cos(t)*sin(t+(2*%pi)/3))+cos((2*%pi)/3+5)*BC*a*sin(t)-FA*a*cos(t) =0

Your last answer was interpreted as follows:

$$-BC \cdot a \cdot \cos(t) \cdot \sin\left(t + \frac{2 \cdot \pi}{3}\right) + \cos\left(\frac{2 \cdot \pi}{3} + 5\right) \cdot BC \cdot a \cdot \sin(t) + (-FA) \cdot a \cdot \cos(t)$$

The variables found in your answer were: $[BC, FA, a, t]$

Solve these to give:

BC = -492.0 N

GC = -492.0 N

GF = 599.5 N

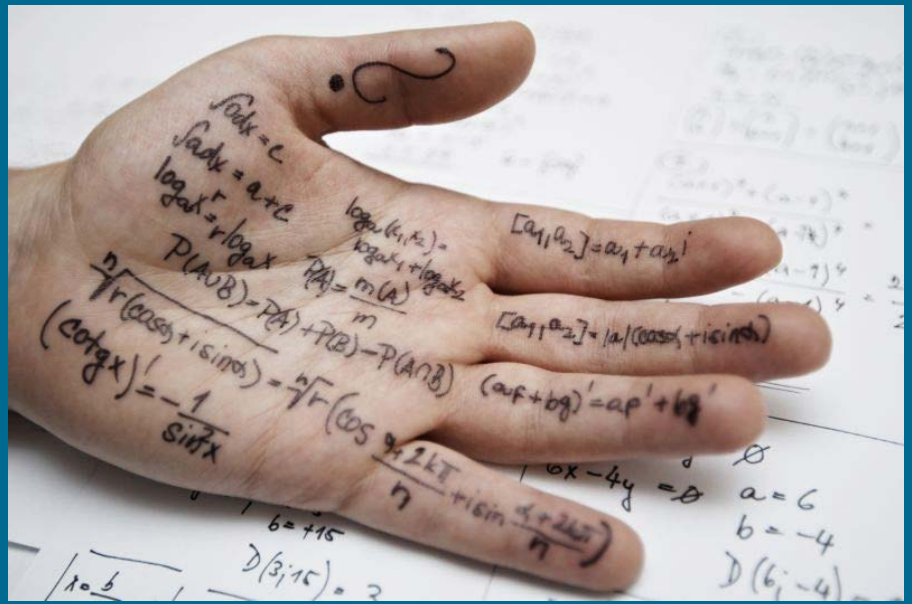
Some thoughts

- Open problem questions can be posed using Open Source tools
- It requires more preparation than just setting a problem
  - How to extract information about their progress from students
  - Training in how to enter information for students
- Feedback can be formative (instructional) an/or summative (assessment)
  - Same question, different quiz settings only needed
  - Challenge of a problem relates not only to the content, but also the available resources
    - Information
    - Time
- Not yet perfect, but improving all the time

Any questions

- Some reference materials:
  - Using STACK to promote random questions in Practice Moodle Quizzes and other articles on that page https://www.researchgate.net/publication/341131131_Using_STACK_to_promote_random_questions_in_Practice_Moodle_Quizzes
  - Some Case Studies of Stack question use https://www.maths.ed.ac.uk/~csangwin/stack/2019-cate-case-studies.pdf
  - Book detailing background/philosophy
    "Computer Aided Assessment of Mathematics"
    Chris Sangwin, OUP, 2013
    http://ukcatalogue.oup.com/product/9780199660353.do

HOW STUDENTS CHEAT?



Brian Coll

Lecturer

Quality & Lean Six Sigma

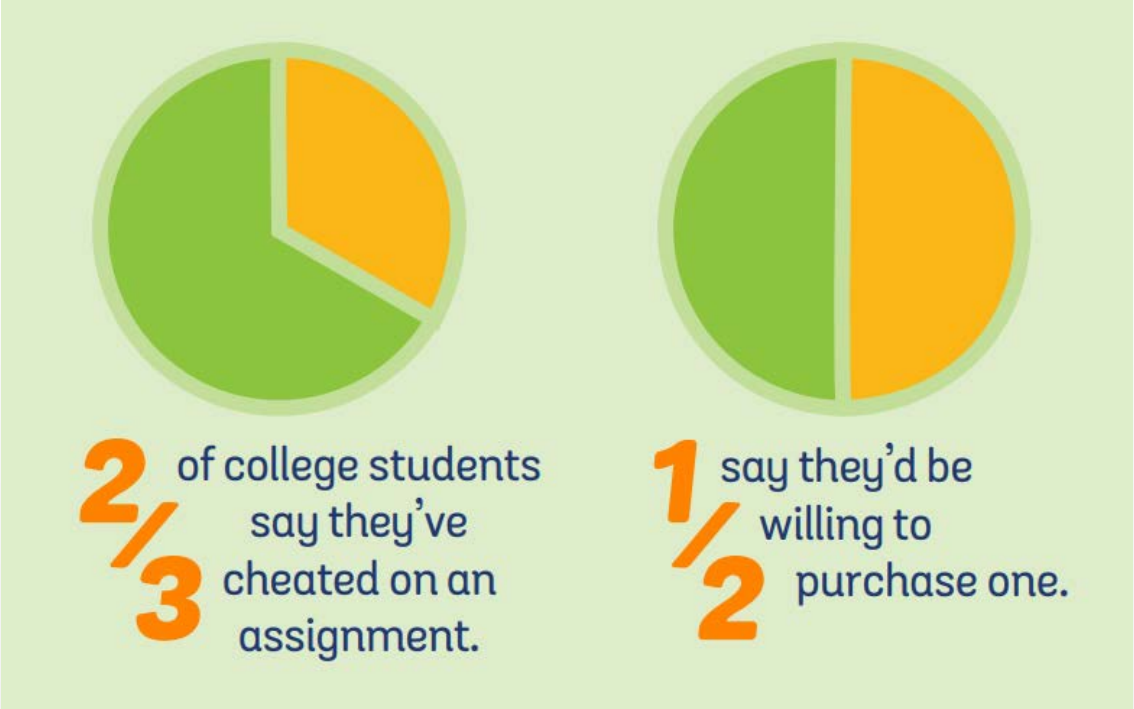
IT Sligo

Coll.brian@itsligo.ie

28th October, 2020

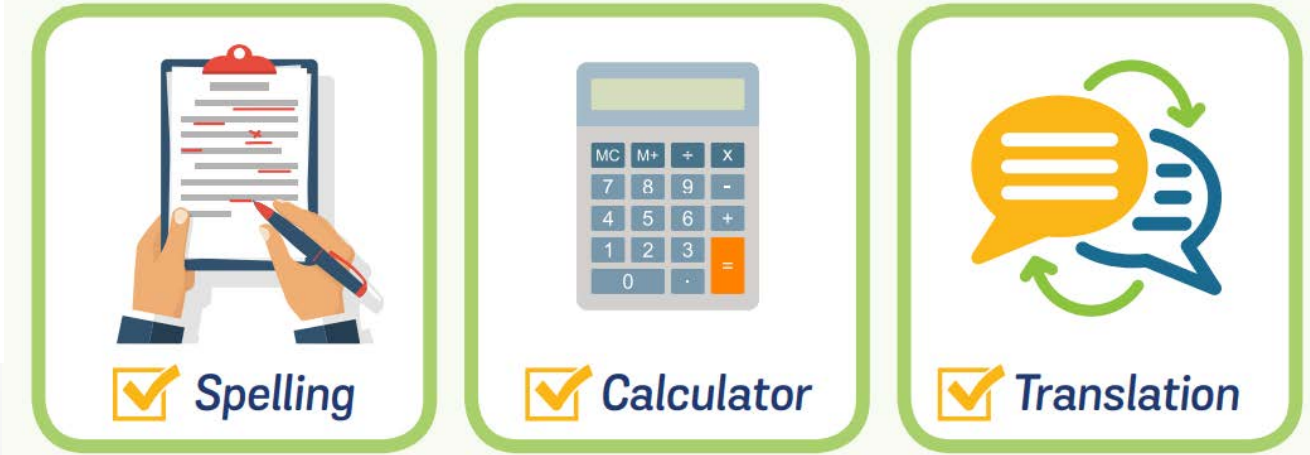
Student Survey on Cheating

- To some students, higher education is just another transaction, less about learning than gaining a credential. (McCabe, 2016)



Ref: McCabe, 2016. How Students Cheat In A High-Tech World. [online] Chronicle.com. Available at: <https://www.chronicle.com/article/how-students-cheat-in-a-high-tech-world/> [Accessed 23 October 2020]./

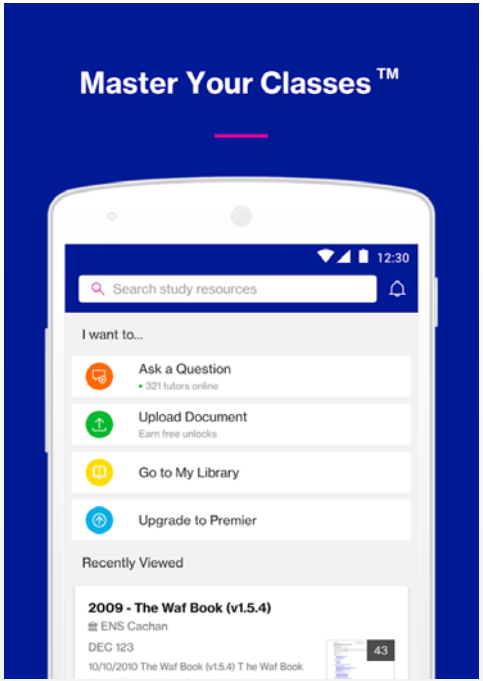
Amazon Alexa Smart Speaker

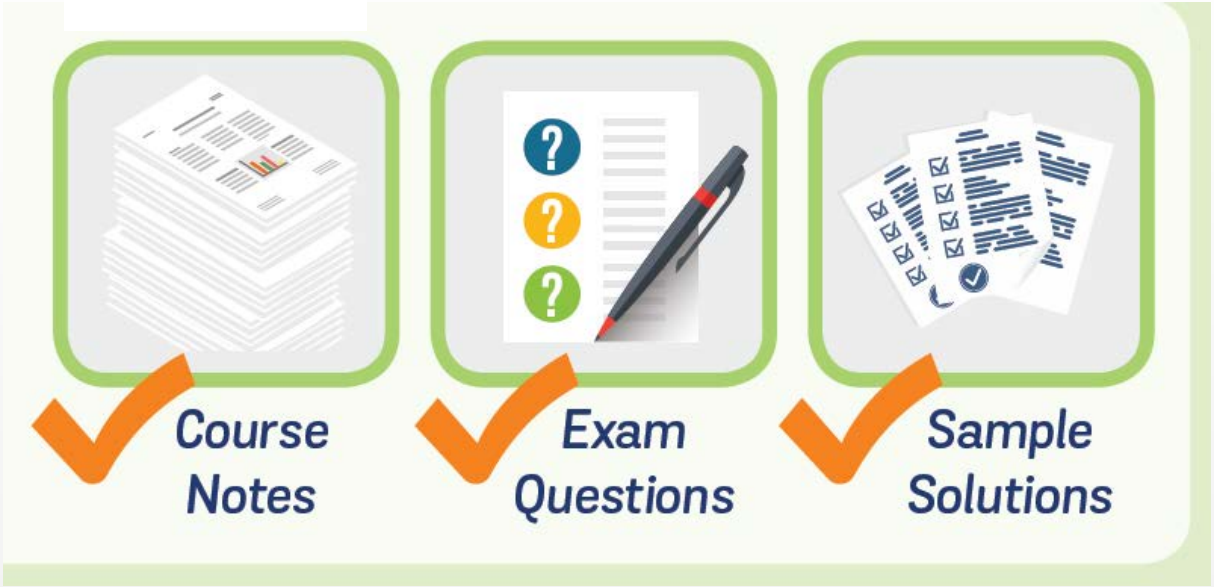


Alexa has inbuilt capabilities, also known as Skills, that can be added to its software to broaden its purpose.

For example, ask Alexa is 1009 a prime number?

Homework Help!

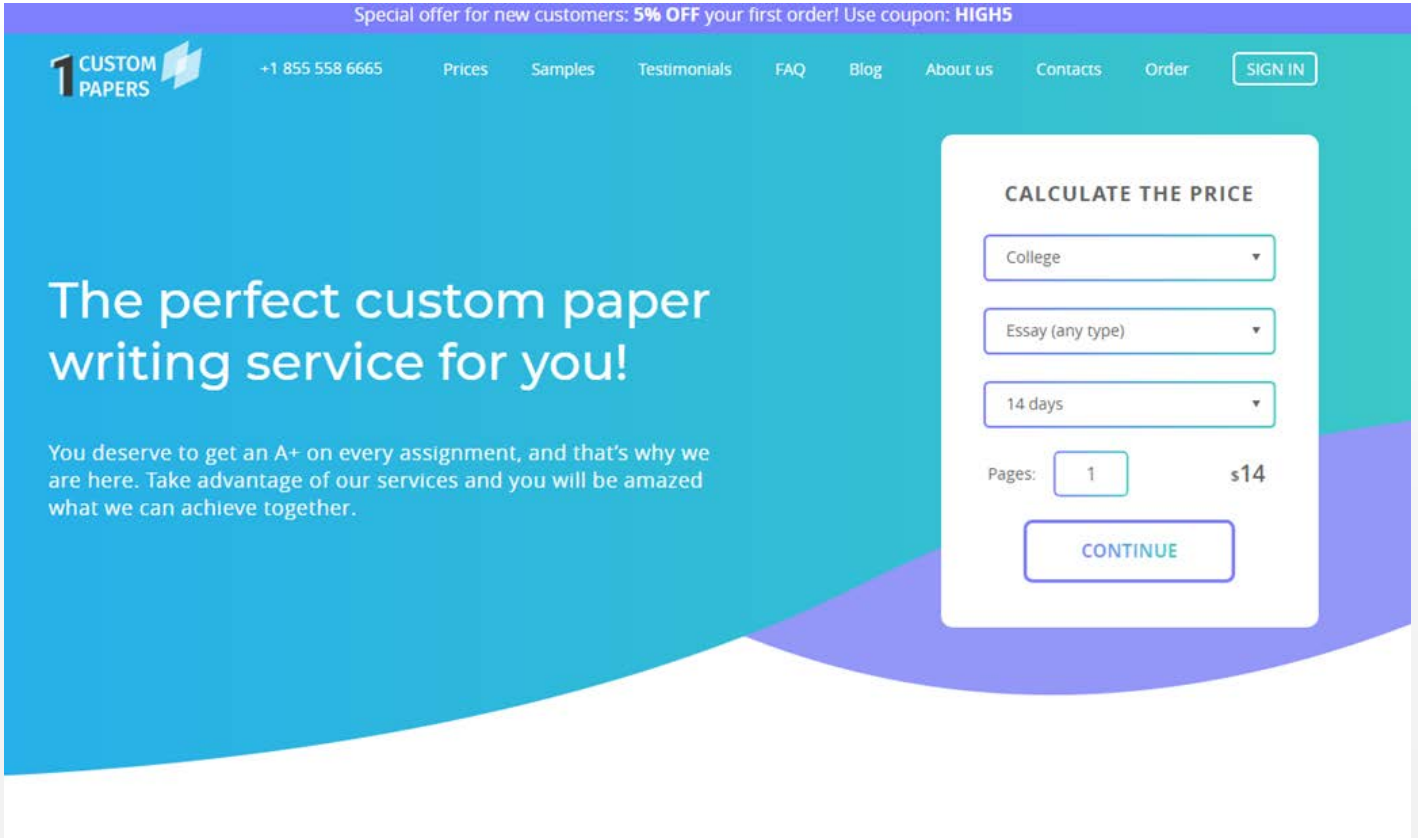




CourseHero has 10 million members accessing their online resources uploaded by students (and professors) with $100M in annual revenue.

Academic Writing Services

Many writers are based in Africa with Kenya being a popular location. They can earn $2 - $5 per page.



NO NEED TO STUDY

AND YOU THOUGHT YOU NEEDED TO STUDY?!

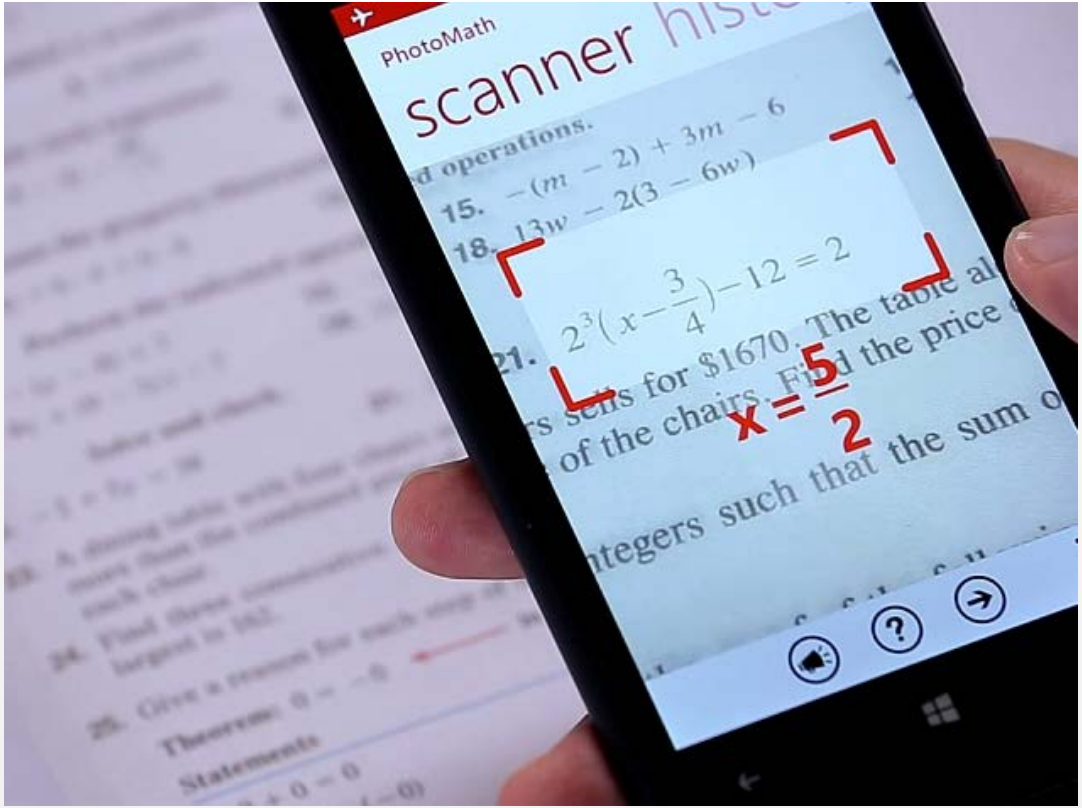
More than a dozen websites now specialise in taking entire online courses. Just provide them with your login details (and your credit card details).

Joey Sanchez

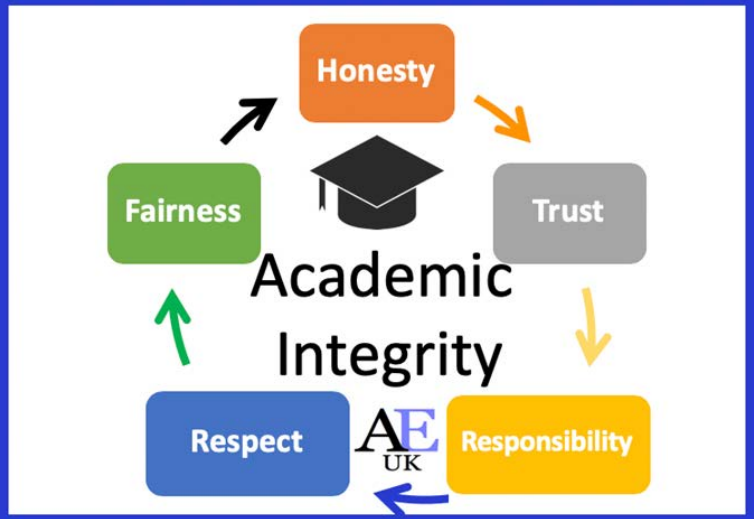
Western Carolina University put *Joey Sanchez* in a class and asked the Professors to find him? They knew that someone was being paid to take the class but they could not locate him!

PhotoMath

- With PhotoMath, you can use your phone to scan an equation and immediately receive the answer.
- Over 100 Million downloads to date.
- Over 1 Billion monthly math problems solved and explained: (1,234,054,453)



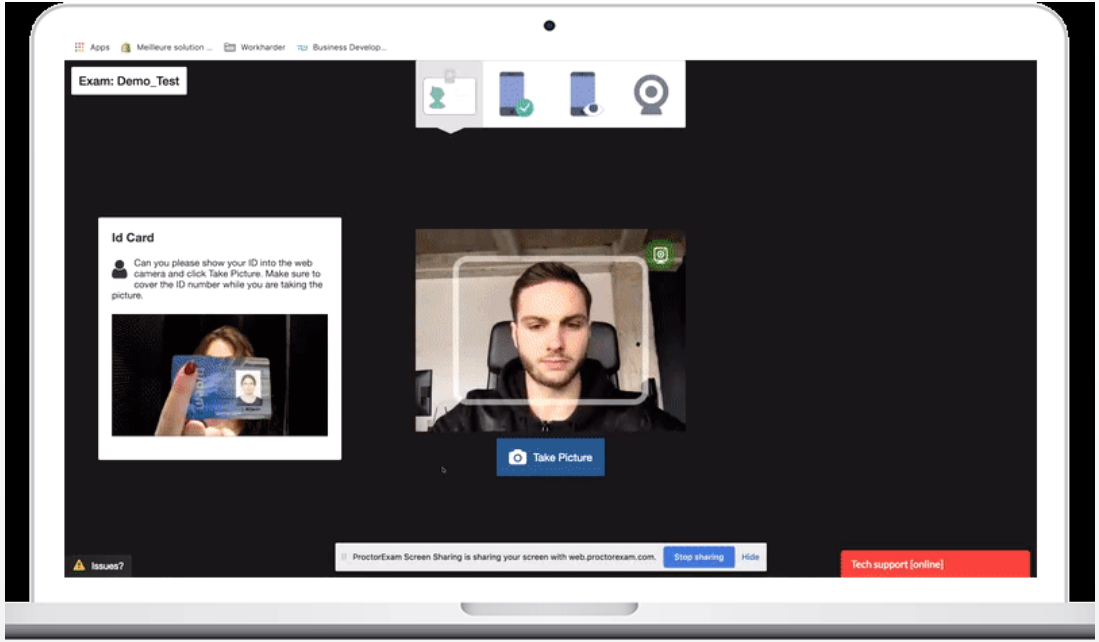
How Student's Cheat



Assessment Strategies to Prevent Cheating

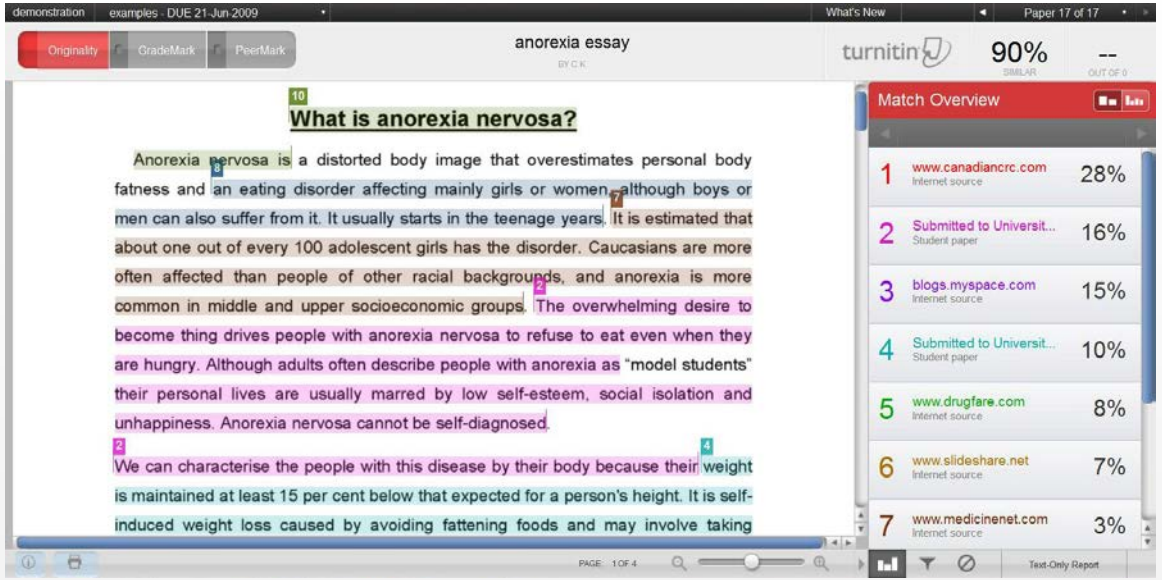
Online Proctored Exams

The student is monitored in real time during the exam. Used for high stakes exams such as final year exams.



Written Assignments

1. Use Plagiarism detection software such as Turnitin.
2. Set clear guidelines for your written assignments.
3. All references must be from the college library databases.
4. All references must be from the last 5 years.



5. Separate Table completed identifying where you located your references.
6. All references must be uploaded in a separate Pdf file to Moodle.

IT Sligo Emerald Database

All references must be from the college library databases.

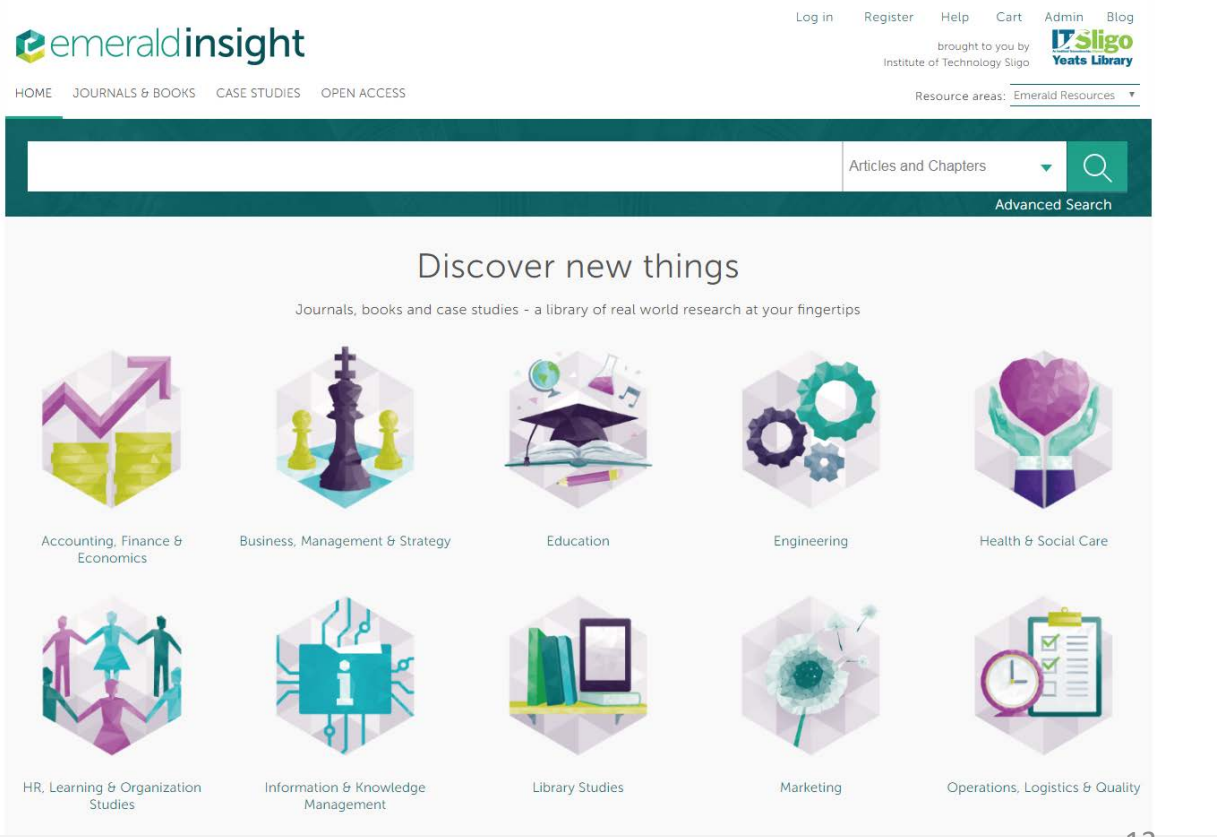


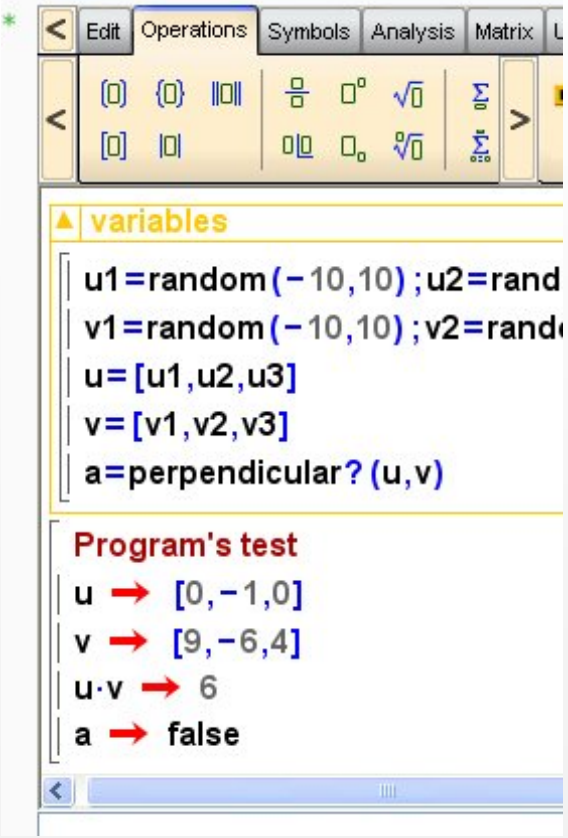
Table of References added as an Appendix

Appendix 2

Reference Name	Where Located	Search Terms Used
Browne, D., O'Regan, B., & Moles, R. (2005). A comparative analysis of the application of sustainability metric tools using Tipperary Town, Ireland, as a case study. Management of Environmental Quality: an international Journal, pp. Vol 16 no 1, pp. 37-54. Emerald Group Publishing Limited.	Emhttp://0-www.emeraldinsight.com.library.itsligo.ie/search.htm?ct=jnl&st1=+sustainability+indicators	Sustainability indicators
Council, D. C. (2012). www.dublin city.ie. Retrieved October 25th, 2013, from http://www.dublincity.ie/WaterWasteEnvironment/Sustainability/Documents/SIR2012.pdf:	http://www.dublincity.ie/WaterWasteEnvironment/Sustainability/Documents/SIR2012.pdf	Sustainability Report
DCENR. (2009). The National Energy Efficiency Action Plan 2009- 2020 (full launch report),http://www.environ.ie/en/Publications/DevelopmentandHousing/BuildingStandards/FileDownLoad,31057,en.pdf. The Department of Communications Marine and Natural Resources.	http://www.environ.ie/en/Publications/DevelopmentandHousing/BuildingStandards/FileDownLoad,31057,en.pdf. The Department of Communications Marine and Natural Resources	National Energy Efficiency Action Plan
Delai, I., & Takahashi, S. (2011). Sustainability measurement system: a reference model proposal. Social Responsible Journal, pp. Vol 7 No 3 pp. 438-471. Emerald Group Publishing Limited.	Emerald	Sustainability measurement
European Parliament. (2006). Directive 2006/32/EC on energy end use and energy services.- http://europa.eu/legislation_summaries/energy/energy_efficiency/l27057_en.htm.	http://europa.eu/legislation_summaries/energy/energy_efficiency/l27057_en.htm.	Directive 2006/32/EC

Online Quizzes (Moodle)

1. Large question bank
2. Randomised questions
3. Limit use of MCQ's – easily defeated!
4. Set a time limit on quizzes – e.g. 1 hour
5. Open on a fixed day and time.
6. Use sequential format to present the quiz questions.
7. For numerical questions, use randomised variables.
   - Wiris quizzes is an excellent quiz question generator.
8. Use text based questions to 'disguise' the underlying equations required.



Upcoming Webinar…

The SDGs on our campuses:

Practice in teaching, research and operations

Thursday, 18th February 10:00-12:30

Full program details will be available shortly.

Call for graphical abstracts

A lot of activity is ongoing to introduce the SDGs into engineering programmes across Ireland. We encourage academics to showcase their work and submit a graphical abstract showing how the rollout of the SDGs is embedded in what they do. Accepted submissions will be distributed to webinar participants and made available on the Engineers Ireland web site. A template is available to guide your work. Graphical abstracts must be submitted by Friday 29 January 2021.

Address all questions to: Kevin.Delaney@tudublin.ie

ENGINEERS IRELAND ACADEMIC SOCIETY

Contact Information

Chair: Aimee Byrne, aimee.byrne@tudublin.ie

Academic Society Chair: Úna Parsons, parsons.una@itsligo.ie

Speakers:

Irene Hayden, irene.hayden@gmit.ie

Louise Lynch, TU Dublin, louise.lynch@tudublin.ie

Stephen Burnley, The Open University, stephen.burnley@open.ac.uk

Paul Young, DCU, paul.young@dcu.ie

Brian Coll, IT Sligo, coll.brian@itsligo.ie

https://www.engineersireland.ie/Professionals/Communities-Groups/Societies/Academic

ENGINEERS IRELAND
ACADEMIC SOCIETY