Faculty of Health Science's Policy on Computer-Based Testing

Important facts

Effective date	1 September 2010
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Policy owner	E-Learning Division; Department of Health Sciences Education; Faculty of Health Sciences
Policy approved by	FUEC – 5 August 2010
Enquiries	E-Learning Manager (Gregory.Doyle@uct.ac.za)

Table of Contents

Definitions

Term	Definition
ELD	E-Learning Division
Computer-based Testing (CBT)	Computer-based Testing (CBT) is a method of administering tests in which the responses are electronically recorded or assessed, or both. Usually this occurs on a computer or other electronic device, such as a tablet or cell phone.
Faculty	Faculty of Health Sciences
Online assessment	A formative or summative test, quiz or examination delivered via a computer connected to a network.

Applicable to

Staff involved in administering and setting of online assessments within the faculty.

Background

The faculty has a long history of running online assessments. The increased usage of online assessments has highlighted the diverse ways in which departments run and invigilate online assessments, which necessitated the creation of a faculty policy to guide staff. Initially the UCT Examinations Policy Manual (*Appendix A*) did not address online assessments specifically, but in 2011 an appendix was added on the "Risks to be considered for online examinations" which addressed some of the issues raised here. The latest version of the UCT Policy, updated December 2015, is more explicit regarding online assessments and includes guidelines on the submission of online assessments in addition to the risks and technical measures to be considered to prevent cheating during online assessments (*Appendix B)*. Emphasised as well, is that the same rigour applied to paper based invigilation must be followed for online assessments.

Rationale

The E-Learning Division initiated this policy in its commitment to achieve high-quality, standardised online assessments within the Health Sciences' Faculty.

CBT has become a preferred method of testing owing to a number of factors:

- It is seen as an integral aspect of teaching and learning used by many departments across many undergraduate and postgraduate courses.

- It eliminates the costs of printing and grading of assessments.

- It has the potential of enhancing student learning through more frequent testing.

- It is more efficient as we have infrastructure which currently allows up to 258 students to partake in an online assessment in one venue, and up to 380 concurrently across the campus.

- The advantages of CBT for both students and educators include:

  o Quick dissemination of results.

  o The ability to include colour photographs and videos.

  o The ability to easily share, edit and reuse questions.

o Simple statistics and analysis of questions which are generated immediately.

o The ability to adapt assessments for students with disabilities.

In alignment with its commitment to support teaching and learning, as well as the effective use of technology within the faculty, the ELD considers the delivery of high-quality online assessments essential to achieving these goals. Furthermore, the ELD endeavours to provide functional support to staff to ensure the smooth running of online assessments.

The greatest concern associated with online assessment is the potential for cheating and dishonesty. Thus this policy specifically addresses security issues which should be considered when an assessment is created or administered. To this end the ELD has put in place, with assistance from ICTS and CILT, a number of recommendations and suggestions to improve the security of CBT in the faculty.

Policy details:

Goal of the ELD

Providing high-quality teaching and learning assistance to staff in the Faculty of Health Sciences to facilitate standardised, secure online assessments. Aligning this assistance to the expectations of the university about the rules and regulations as set out by the University's Examination Manual.

General computer lab booking procedures

- Technical support in computer labs is normally from 08h00 to 16h30, Monday to Friday - which can be extended with prior arrangement.

  - To book a computer lab, please do so by clicking here (https://ictsapps.uct.ac.za), Lab System, Users, Make a booking)

- It is the responsibility of the convenor running the online assessment, or representative, to ensure that the required computer lab(s) is booked and confirmation thereof has been received.

- In the event of a fire alarm being sounded in the New Learning Centre (NLC) complex, Anatomy building or Health Sciences Library during an assessment, the building Health and Safety representative will inform the computer lab administrator whether to vacate the venue or not. Should staff and students be instructed to vacate the building in the event of an emergency, the affected assessment will be declared null and void.

Closed-Circuit Television Surveillance

There are 16 CCTV cameras in the HealthLab. These are spread across the teaching areas and cover the entrance to the computer lab as well as the passage leading to the toilets. Keep in mind that the clarity of the footage depends on the distance between the point of interest and the camera. In other words, the activities of students close to the cameras can be seen in greater detail than those further away. The cameras are clearly identifiable in the lab.

Footage is stored for a period of up to seven (7) days. Requests to see footage recorded during an assessment can be directed to Garth.Hector@uct.ac.za and can be viewed in his office.

Responsibilities of ELD staff

Regarding online assessments delivered on Vula, the ELD will, if asked:

- Train staff members and assist in authoring, publishing and extracting results from online assessments (see *Appendix C* for list of questions to be answered).

- Provide guidelines as to the format in which assessments must be submitted (see *Appendix F*).

- Capture the assessment questions on Vula, or modify an existing assessment for a June or November examination and have it ready, provided it is received **2 weeks** in advance. End-of-block assessments and class tests must to be handed to the ELD at least **1 week** in advance.

- Publish assessments pending approval from the staff member involved, send password via SMS at least 24 hours before assessment.

- Retrieve standard reports from the system within 24 hours after an assessment and send these reports to a staff member. If requests for further analysis or work are required on the extracted reports, these must be indicated as soon as possible to allow the required adjustments/ additional analysis to be done within a week after the end of the assessment.

- Note: where a re-grade of questions has been requested, only answers/marks to MCQs can be adjusted and not Multiple Response MCQs and EMI-type questions.

The following technical assistance can be provided by ELD staff.

- An ELD member will be in the venue for the first and last 20 minutes of the assessment period. If not in the venue, the ELD member will leave his/her contact details and will return to attend to any technical problems experienced. If requested, an ELD member can be there for the entire assessment.

- The ELD will provide advice and assistance to ensure the online assessment is as secure as possible, within the allowance of current infrastructure and software capabilities.

Security measures

- The exam will be available 15 minutes before the start time and 30 minutes after end time of the scheduled time

- Avoid using flash disks contain assessments on unsecure and/or public computers such as those in lecture theatres and computer labs.

- Do not copy assessments to/from unsecure and/or public computers.

- **Avoid emailing assessments which are not password protected and under no circumstances should the ELD be emailed assessments.**

- Sufficient invigilators should be provided, as per UCT Examination Manual (extract in *Appendix D*) guiding written assessments at the University.

- Guidelines regarding recording student attendance and the use of restrooms should be followed as per UCT Examination Manual.

- When assessments are made available via Vula, the following security restrictions should be put in place:
    o The specific date and time when the assessment is available for access.
    o Access to the assessment is only given to those students who are writing, i.e. if only some students in the class are writing.
    o A password for each assessment.
    o If students are writing in the computer lab they should only be able to access the assessment via the lockdown browser. This ensures that students are not able to access any other program on the computer, including the internet, use a flash disk, print, copy or paste questions.
    o The password should be changed as soon as all students have started.
    o The assessment should be retracted as soon as the last student finishes.
    o The options of multiple choice questions should be randomised if possible.

- o The order in which questions are asked should allow access to previous questions and in a set order, unless the format of the assessment does not allow that.

- o Entrance cards should be used to enable randomised seating of students. If possible a list indicating random pre-arranged seating should be organised.

- o If students are given scrap paper to work from, such paper should be uniquely marked and requested from students when they leave the venue.

- o Once a student has completed and submitted an assessment the student should log off Vula, restart the computer and, if possible, leave the computer lab. Under no circumstances should the student be allowed to continue to use the computer for other purposes.

See *Appendix B* for additional risks to be considered.

Responsibilities of staff members

Faculty staff are encouraged to:

- Ensure that the format of a final year assessment has been used at least once during the year; the ELD will discourage using an assessment format which the students are unfamiliar with.

- Obtain the necessary training to enable staff to facilitate/coordinate their teaching in an environment that includes online assessments.

- Forward all online assessments, which must be created at least 2 weeks in advance and according to the ELD's guidelines, via the EDU Dropbox vula site.

- Fill in the required form for each assessment (*Appendix C*) and upload to EDU Dropbox.

- It is the responsibility of the course convenor or representative to check assessments and sign them off before the ELD publishes them.

- Give feedback with regards to the service received.

- It is the duty of the course convenor or representative to provide invigilation of the assessment according to the UCT Examination Manual. (Note: ELD staff or computer lab (administrators) are not allowed to act as invigilators. ELD staff are there exclusively to offer technical support.)

- It is the responsibility of the staff member to inform the ELD of any further adjustments to scores obtained after student submission of the exam

- Follow this policy even if they do not require assistance from the ELD in creating, publishing and administering their assessments.

During an assessment

Please note:

- The Chief Invigilator is responsible to ensure that UCT's Examination Manual rules are adhered to (see *Appendix D* for more invigilator information and *Appendix E* for some helpful Vula information for invigilators).

- At the start of the assessment the Chief Invigilator needs to ensure that the students are made aware of any instructions applicable to them. Notes, **watches (**digital or analogue), cell phones or USB flash disks are to be on, or near, their person or workstation.

- *Appendix C* contains some information which may assist invigilators in their duty.

- There are specific UCT rules which apply to students who want to go to the restroom.

- Invigilators are required to take an attendance record as per UCT policy.

After an assessment

ELD staff members will, if asked:

- Make a copy of the exported spreadsheet and analysis available via the EDU Dropbox site.

- As far as possible make adjustments to the scoring and marking of the published assessment.

- If requested, provide a detailed activity log of submissions by students.

Policy violations

- If staff members do not forward materials to the ELD on time, in the correct format via the ELD Dropbox, they risk having their assessment not uploaded in time.
- If the convenor or representative of an assessment is not present in the exam venue at the scheduled start time, ELD staff members will not proceed with an assessment.
- If staff members do not adhere to the security measures as outlined in the policy, the ELD will not be responsible for questions which are leaked.

Appendix A: Extracts from UCT Examination Policy Manual

Setup of online examinations

The setup and configuration of online examinations must be done in consultation with CILT, ICTS and Faculty ELD staff in advance.

Extra-time candidates should be accommodated in the same venue(s) as the other candidates taking the examination. Online exams should preferably take place during office hours but where required after hours, a technician must be present to assist with any technical queries and/or problems that are reported.

Guidelines for the submission of electronic examinations

1. *NO submissions*: The examiner has to ensure that there are mechanisms in place so that candidates can check whether their submissions have gone through before they leave the venue. With such a mechanism in place, it is thus each candidate's responsibility to check that his/her submission has indeed gone through before he/she leaves the exam venue. At the end of the examination, when the exam venue has been cleared of all the candidates, no more submissions will be permissible and any candidate with a no submission will be awarded a mark of zero for that exam.
2. *EMPTY submissions*: The convener must create sufficient opportunities for candidates to practice during teaching to address this concern. It is the responsibility of each candidate to complete any such practice submission(s). The understanding is that successful completion of the practice submission(s) will in turn lead to successful completion of the actual examination submission, provided that the same steps are followed. Failure to complete the practice submission(s) may lead to insufficient submission skills. Among other things, this may result in empty submissions, in which a submitted folder contains no files. Any candidate with an empty submission will be awarded a mark of zero for that submission.
3. *WRONG submissions*: It is the candidate's responsibility to ensure that his/her submitted files are the correct ones. This especially applies to open book exams in which candidates are allowed access to his/her Network drives during the exam. Any candidate who submitted the wrong file will be awarded a mark of zero for that submission.
4. *INCOMPLETE submission*: Computer difficulties during the exam must be reported immediately to the chief invigilator, and handled at his or her discretion and must be resolved in a manner that does not prejudice the student.
5. *Using file names* other than those specified in the examination instructions may lead to a loss of marks. Similarly, submitting the examination in a way other than that specified may lead to a loss of marks. Such cases will be dealt with at the discretion of the examiner. The examination submission instructions should specify clearly any penalties that may be applied in any such cases.

At the start of an examination

Students must produce their registration cards to be admitted to examination venues and to be allowed to take the examinations. Where a student does not do so, the examination invigilator may not allow the student to take the examination, or may use his or her discretion to allow the student to take the examination if he or she can produce another acceptable form of photo identification

No late comers may be admitted to the hall after an hour has elapsed. No extra time is to be given to late comers
A student may not leave an examination venue during the first sixty or the last twenty minutes of the examination

Extra time students

Senate recognises that a student with a learning or physical disability may require extra time in examinations. Senate will consider applications from students for extra time in examinations and may in its absolute discretion grant extra time to a student who has a learning disability or a physical disability. (A learning disability, for the purpose of this rule, is a disability that affects one or more of the basic processes involved in the use of written or spoken language in a manner that constitutes a significant impairment of that process/function)

Other

During examination candidates are prohibited from having on their persons any cell phone or programmable electronic device other than what has been specifically allowed.

Appendix B: Risks to be considered for online examinations

Before examinations

- Inappropriate technology choices / lack of awareness of risks.
- Incorrect setup of online examinations (e.g. to reveal answers)
- Disclosure of examination questions (e.g. a lecturer's or administrator's PC being compromised by spyware / malware / phishing, network security being compromised by password disclosure, or material being placed in an insecure online location)

During examinations

- Access to supporting content (e.g. on Vula, on the PC, on the Internet)
- Communication with others (e.g. Chat, SMS, IM) from PC or mobile phone
- Leaking examination password (allowing examination to be taken online outside the examination venue)
- Recording the examination questions for subsequent "underground" circulation (cut & paste to desktop / flash drive / online location)

Security factors to consider for online examinations

- Designing the examination appropriately to minimize scope for cheating. Randomized questions and answers (each student has a different set of questions, answers presented in a random order).
- Password restrictions for each examination (what you know).
- IP-based restrictions for each examination (where you are).
- Restrictions on the Windows desktop and browser in the lab during the test (e.g. no ability to run other programs).
- Restrictions on the network configuration for the lab during the test (e.g. no external Internet access).
- Time pressure.
- Analysis of results.
- Detailed activity log on Vula (later doing a forensic auditing if required).

Appendix C: Information required when setting up an online assessment

1. Title of the Assessment.

2. Date of the Assessment.

3. Start time of the Assessment.

4. Duration of the assessment.

5. Is there negative marking? If yes, please indicate how much.

6. Are there students who require extra time? If yes provide the student numbers, names and the amount of extra time to be allowed.

7. Are students allowed to return to previous questions? If no, please be aware that there will not be a "Previous" button and that students are only allowed to click "Next" to proceed to the following question.

8. Will you require ELD to download the results of the assessment? If so, the email address to whom the results should be emailed?

9. Lecturer responsible for this assessment.
    a. Cell phone number
    b. Cell phone number of administrator

Appendix D: Invigilators Information for On-line Assessments (extract)

1. Take register of invigilators in attendance through mutual introductions to enable cooperation.
2. Explain rules regarding students' right to leave (not before an hour; not in last twenty minutes), and explain toilet arrangements (see 11 below).
3. Explain procedure to be followed once examination has begun:
   3.1 Gather answer books and attendance slips from unoccupied places
   3.2 **Systematically** collect entrance cards and attendance slips (row by row to avoid later problems with reconciling slip numbers with headcount numbers) – so allocate individuals particular rows and keep each row's cards and slips separate to reconcile with row headcounts
   3.3 Check that all students have student ID cards and is required that ID photos are compared with face of person writing when entrance cards and attendance slips are collected – provide pink forms to those without IDs, and *wait to collect top section.* (This will go to the department)
   3.4 Allocate individual invigilators rows other than those whence they collected slips to undertake headcount (or else chief to do headcount, recorded by row).
4. Remind all invigilators of the requirement to move around the room and to be vigilant throughout examination (no reading; chatting; tea to be taken serially).
5. Appoint one man and one woman to be responsible (after a full hour only – no toilet absences before that) for completing a toilet register and require those two invigilators consistently to ensure that no more than one student of either gender is in the toilet at any one time. Those two need to be advised specifically about rules as per 3.7 in "Instructions to Chief Invigilators". If more than one course is being examined, a register needs to be kept for each course as the register(s) must be returned to the department.
6. Explain procedure for reconciling headcounts with attendance slips and for using attendance slips to mark attendance register; and specify who will be responsible for those tasks. Emphasise that during that time, others must be additionally vigilant.
7. Stress that all invigilators are accountable to the chief invigilator for their conduct during the session, and that chief invigilators, who are accountable to their respective Head of Department, are also required to report invigilator misconduct (or non-attendance) of invigilators from other Departments to their respective Heads of Department.

   Depending on the number of students sitting for the exam, invigilators and technical support member will report to the exam venue as follows (this will allow the chief Invigilator to announce all instructions and procedures to students before the start of the exam):
   - At least 15 minutes before the exam is scheduled to start – up to 70 students
   - At least 30 minutes before the exam is scheduled to start – up to 200 students

Appendix E: Vula help for invigilators

To access the exam, the student will do the following:

If the Respondus lockdown browser is activated for the exam:

- Click on the Lockdown browser on the computer desktop and log in with student username and password
- Navigate to the relevant Vula site

1. Click on **Tests & Quizzes** in the menu bar on the left of the screen

2. Fifteen minutes before the start of the exam, the exam title will appear on the Test & Quizzes page
3. To access the exam, the student clicks on the title of the exam
   a. Information and instructions regarding the exam will appear for the student to read through.

The following are general instructions given to all students before the start of the exam. Invigilators will announce and follow up on these instructions:

- **Please switch off your cell phone and leave all bags/notes/flash drives/cell phones against the wall**

- **Students, who have to use the bathroom facilities during the exam, are required to write their names and student numbers on the toilet register provided at the reception area desk. An invigilator will accompany the student to the bathroom to ensure that students are not using cell phones/accessing notes/talking to other students, etc. in the bathrooms.**
- **A candidate who attempts to obtain help from any other candidate, or who has any unauthorised book/ notes/ electronic devices including flash drives in his/her possession, may be disqualified and further dealt with as may be determined by the Senate.**
- **Only click "SUBMIT FOR GRADING" once you are satisfied that you have completed all questions.**
- **Please raise your hand, if you are unsure of how to proceed with the exam or experiencing problems.**

The following are instructions given to all students before the start of the exam. These instructions are dependent on the Vula exam settings for the specific exam. Invigilators are responsible to check which instructions apply to the exam being invigilated:

- **The duration of the exam**
- **The number of questions**
- **If there is negative marking and the distribution thereof**
- **Explain how to answer EMI questions; student has to type in the option number only, i.e. the numeric number only with no full stops or other punctuation. Example: 1**
- **Explain how to answer multiple correct questions, if student selects more than the requested amount of answers, the student will score 0. E.g. the question reads *"… select TWO correct answers…"* and the student selects 3 options, the student will score 0 for that question.**
- **Explain how to answer matching type questions, student will match an options list or diagram labels to the correct answer appearing to the right of the question number.**
- **If students are allowed to return to previous questions, by clicking on "Previous" or by clicking on "Table of Contents". To proceed to the next question, click "Next". By clicking "Next" your answer is automatically saved.**
- **The Mark for Review tick box can be ticked if student wants to mark the question to review the answer later. Student can retrieve the questions they marked for review by clicking "Table of Contents". The questions marked for review will be indicated with a question mark before the question. Student will click on the question text and have access to the question to re-answer if necessary.**

4. The student types in the password, which will be announced by the invigilator.
   a. Once the correct password is typed in, the student clicks on "Begin Assessment" and will have access to the exam.
   b. In some cases they will not gain access to the exam, due to typing in the incorrect password. Passwords are case sensitive and a space is also regarded as a character.
   c. 5 minutes into the exam the password will be changed and will no longer work.
5. The student views 1 question at a time or 1 question per page is viewable
6. The student views his/her remaining time at the Time Remaining Timer

7. The "Mark for Review" tick box allows the student to tick the box to remind them to come back if they want to review the answer. The questions which have been marked for review can be seen by clicking on the **Table of Contents**.
    a. By clicking Table of Contents, the list of Parts will appear
    b. Unanswered questions / Answered Questions / question marked for review will be indicated
    c. Student will click on the question text to return to the question to select correct answer, then to click "Next" to continue

8. Student clicks "Next" to continue to next question. The "next" button will also save the question. There is NO need to click the "Save"
9. Student clicks "Previous" to view previous question.
10. Student clicks "Submit for Grading" only when the end of the exam is reached and satisfied with answering all questions.
    a. Once "Submit for Grading" has been clicked, a new window appears to confirm Submit for Grading. At this point, the "Previous" button can be clicked to return to the exam.
    b. After the second "Submit for Grading" is clicked, the student cannot return to the exam.

11. Should the student lose access to the exam, the student should do the following:

    a. Click on link to the title of the exam
    b. Type in the current password. Ask the technical assistant for the current password, as would have been changed as a security measure.
    c. Click Begin Assessment.
    d. Student will now have access to the exam again with all completed questions saved.
    e. Note, the student will lose time during the loss of access to the exam
    f. Student completes the remaining questions as per normal.

Appendix F: Format of questions for uploading to Vula

Multiple Choice

Instructions: Each answer should begin with its appropriate letter, in alphabetical order. The correct answer should be prefixed with an asterisk (*).

Example:
1. (10 points)
Who was the first president of the United States?

*a. Washington
b. Jefferson
c. Lincoln
d. Clinton

Multiple Correct Answers

Instructions: Each answer should begin with its appropriate letter, in alphabetical order. The correct answer should be prefixed with an asterisk (*).

Example:
2. (15 points)
Which of the writers below were American citizens at some point in their lives?

*a. Bill Faulkner
b. Ginny Woolf
*c. Tom Eliot

Extended matching items (EMI)

Instructions: Each question should have a theme, options of possible correct answers, a lead in statement then the questions. Each question should include the correct answer(s)

Example:
Theme: Anticoagulation (5 marks)

Options:

A. Aspirin
B. Clopidogrel
C. Alteplase
D. Enoxaparin
E. Streptokinase
F. Unfractionated heparin
G. Warfarin

Lead in: For each of the following statements regarding anticoagulation, write the number of the most appropriate treatment from the options list above in the ANSWER column below. Each option may be used once, more than once, or not at all. Where specified, there is more than one correct answer.

ANSWER	ITEMS
AB	You admit a 57-year-old man to your ward for the management of deep vein thrombosis. He has chronic kidney ……
C	This drug is most likely to cause ….
F	This drug should be avoided in the last trimester …
B	This drug may be used as an ;;;

Matching Questions

Instructions: You can supply an image (JPEG) or options which need to be selected (matched) with each question.

Example:
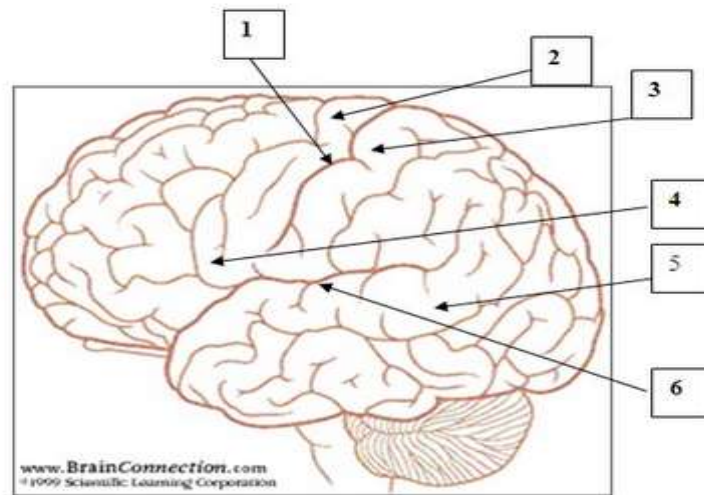
A. the sensory cortex
B. the central sulcus
C. the motor cortex
D. Broca's area
E. Wernicke's area
F. the lateral sulcus

select ▼	1. 1
select ▼	2. 2
select ▼	3. 3
select ▼	4. 4
select ▼	5. 5
select ▼	6. 6