

**ASSISTIVE TECHNOLOGY AND EXAMINATION LOGISTICS**

**Guidelines**

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# **1. Assistive Technology: Use of Computer Examination Guidelines**

To create effective guidelines for universities that are implementing assistive technology and accommodations in examination settings, it's important to ensure that these guidelines are clear, equitable, and supportive of all students, especially those using assistive technologies. Here's a structured set of guidelines that universities can adopt:

## 1. Pre-Examination Responsibilities

* **1.1. Training and Familiarisation**: Ensure that students who require assistive technology are given comprehensive training and time to familiarise themselves with the software, and hardware they will use during examinations. This should include hands-on sessions and troubleshooting common issues.
* **1.2. Equipment Testing**: Test all assistive technologies and equipment prior to the examination date to confirm they are functioning properly. This includes checking software updates, hardware compatibility, and backup systems.
* **1.3. Accommodation Approvals**: Students must submit requests for any special accommodations or the use of personal equipment (e.g., specialized keyboards, own laptops) well in advance. These requests should be reviewed and approved by the disability services office.
* **1**.**4.** Visit the computer venue prior to examinations.

## 2. Examination Setup

* **2.1. Venue Arrangement**: Designate specific venues for students using computers and ensure these venues are quiet, accessible, and free from disturbances. Provide noise cancelling headphones if requested by student.
* **2.2. Technical Support**: Provide dedicated technical support at all examination venues where technology is used. This support should be readily available throughout the examination to address any technical issues promptly.
* **2.3. Examination Images**: Create tailored examination software images that restrict access to unauthorized resources such as the internet, external applications, and communications tools, while maintaining the necessary functions for the exam.

## 3. During the Examination

* **3.1. Regular Saving**: Instruct students to save their work frequently. Establish automatic background saving within the word processing software to minimise the risk of data loss.
* **3.2. Equipment Use**: Prohibit the use of unauthorized external devices unless previously approved. Students must rely solely on the equipment provided or approved by the university to ensure fairness.
* **3.3. Immediate Reporting**: Encourage students to report any difficulties to the invigilator immediately, without delay, to resolve issues as quickly as possible.

## 4. Technical and Logistical Support

* **4.1. Sufficient Hardware**: Ensure a sufficient number of workstations, including at least one backup workstation and necessary peripherals (e.g., printers) are available at the examination venue.
* **4.2. Power Supply and Data Security**: Confirm that all computers are fully charged and plugged in, and that they have been cleared of previous data to maintain examination integrity.
* **4.3. Contingency Plans**: Develop and implement robust contingency plans for equipment failures or other technical issues, including ready availability of backup equipment and immediate on-site technical assistance.

## 5. Post-Examination Procedures

* **5.1. Data Handling**: Establish clear guidelines for saving and submitting examination work. Specify whether students should save, print, or electronically submit their answers, and ensure compliance with data privacy regulations.
* **5.2. Review and Feedback**: Offer students and faculty the opportunity to provide feedback on the assistive technology and accommodation processes. Use this feedback to make continuous improvements.

## Conclusion

These guidelines aim to provide a comprehensive framework that ensures all students, particularly those requiring assistive technologies, are given an equitable opportunity to demonstrate their academic abilities under standardized and fair conditions. By meticulously planning and executing these guidelines, universities can enhance the integrity and inclusiveness of their examination procedures.

# **2. Case Study: Tablets Use in Examinations**

## 1. Rationales for iPad Use

Use of an iPad for a student with visual dyslexia, dyspraxia, and ADHD, particularly in an engineering programme, is well-supported by several rational points:

1. **Accessibility Features:** iPads offer a range of accessibility features beneficial for students with disabilities. For a student experiencing the "halo of text" effect associated with visual dyslexia, customisable text options (such as font size, style, and background colour) can help reduce visual stress and improve readability. Colour contrast settings are also vital, as they can enhance text visibility and graph comprehension.
2. **Interactive and Visual Learning**: Engineering involves complex equations and graphical data. iPads allow for dynamic interaction with these elements. Students can zoom in for a clearer view and manipulate objects, which is particularly helpful for those with dyspraxia who may struggle with fine motor skills needed for traditional drawing or writing.
3. **Note-Taking and Organization Tools:** iPads support various apps that facilitate organised notetaking and data management, which are beneficial for students with ADHD who often face challenges in these areas. Apps like Notability and GoodNotes allow integration of typed text, handwritten notes, and audio recordings, providing a multimodal approach that can help in maintaining focus and better information retention.
4. **Real-Time Problem Solving:** In time-sensitive assessments, the ability to quickly erase and redo work on an iPad can reduce physical barriers and anxiety related to manual corrections. This feature is especially useful in mathematical and engineering contexts where students often need to adjust complex calculations and diagrams.
5. **Portability and Convenience**: The compact and portable nature of an iPad means that students can easily carry it between classes, study sessions, and home. This is beneficial for maintaining a consistent and organized study environment, which can help mitigate the impact of ADHD on academic performance.
6. **Custom Apps and Software:** There are numerous educational apps designed specifically for STEM students that can run on an iPad. These include graphing tools, scientific calculators, and applications for coding and designing, which are integral to engineering studies.
7. **Enhanced Engagement:** The interactive nature of tablets can lead to higher engagement levels. For students with ADHD, who may struggle with attention and engagement, the tactile interaction with study material can promote sustained focus and interest.

## 2. Logistics for Implementing iPad Use

Implementing iPads for students with disabilities, such as visual dyslexia, dyspraxia, and ADHD, in engineering programs during exams raises several technical and logistical issues that need to be addressed to ensure a smooth integration:

1. **Exam Integrity and Security**: Ensuring that the use of iPads does not compromise exam integrity is crucial. Measures such as disabling internet access, restricting app usage during exams, and using secure testing platforms are necessary to prevent cheating.
2. **Compatibility with Exam Formats**: Not all exam formats may be compatible with iPads. Technical adjustments might be required to ensure that digital versions of exams are accessible and functionally equivalent to their paper counterparts. This includes formatting issues with diagrams, equations, and other specialized content common in engineering courses.
3. **Accessibility Compliance**: The exam content on iPads must comply with accessibility standards. This includes providing text-to-speech options, adjustable text sizes and colours, and accessible calculators or graphing tools. Regular updates and checks should be conducted to ensure these tools are working properly.
4. **Training for Students and Staff**: Both students and invigilators need training on the use of iPads in an exam setting. Students require familiarity with the device's features related to their specific needs, while staff need to know how to support these technologies during exams, handle technical issues, and ensure compliance with exam rules.
5. **Technical Support:** Reliable technical support should be available during exams to address any issues that arise with iPad use. This includes hardware malfunctions, software glitches, and user errors, which could otherwise significantly disrupt the exam process.
6. **Device Provision and Maintenance**: Schools must ensure that iPads are available for all students who require them and that these devices are properly maintained. This includes updating software, ensuring battery life is sufficient for exam durations, and handling repairs or replacements as needed.
7. **Privacy and Data Protection**: Protecting students' personal and exam data is paramount. Proper data protection protocols must be in place to secure information stored on or accessed through the iPads.
8. **Flexibility in Exam Settings:** Accommodations may be needed to allow students to use iPads effectively. This could involve providing isolated spaces to reduce distractions or allowing extra time for those who need to use accessibility features.

## Conclusion

In summary, using an iPad can provide tailored learning experiences that address the specific challenges faced by a student with visual dyslexia, dyspraxia, and ADHD. These advantages align well with the demands of an engineering curriculum, potentially leading to improved academic performance and a better overall educational experience.

# **3. Guidelines for the Use of Computers in Examinations for Students Who Are Blind/Vision Impaired**

To accommodate students who are blind or vision impaired during examinations that utilize computers, universities need to create specific guidelines that address both the setup and operation of the necessary technologies. These guidelines can ensure that all students have equitable access to examination materials and can perform to the best of their abilities. Here's a detailed set of guidelines tailored for this purpose:

## 1. Pre-Examination Setup

* **1.1 Accessibility Audit**: Conduct an accessibility audit of examination venues to ensure that they are fully accessible for students who are blind or vision impaired. This includes checking for adequate space for special equipment, accessible entrances, and suitable desk heights.
* **1.2 Technology Provision**: Arrange for the necessary technology based on the specific needs of each student:
	+ **Blind students**: Provide document reading software, word processing capabilities, (Braille displays, and Braille embossers).
	+ **Students with low vision**: Set up screen magnification software and provide large computer monitors as needed.
* **1.3 Software Configuration**: Install and test all software well in advance of the examination, including text-to-speech programs, Braille translation software, and screen readers. Ensure compatibility with the examination format.

## 2. Examination Materials Preparation

* **2.1 Electronic Formats**: Convert all examination papers into electronic formats that are compatible with text-to-speech software and Braille translation devices. This includes ensuring that the documents are properly formatted without inaccessible elements like images without alt text.
* **2.2 Practice Sessions**: Offer practice sessions for students to familiarize themselves with the equipment and software. This should include navigating the examination interface and using the assistive technologies effectively.

## 3. During the Examination

* **3.1 Technical Support**: Provide immediate technical support to address any issues with assistive technology during the exam. This should include on-site IT staff who are trained in accessibility issues.
* **3.2 Adaptive Equipment Use**: Allow the use of personally approved adaptive equipment if the institution’s provisions are inadequate or unfamiliar to the student, subject to prior approval.
* **3.3 Monitoring and Assistance**: Have trained invigilators present who are familiar with the needs of visually impaired students to assist with any non-technical issues that may arise.

## 4. Post-Examination

* **4.1 Feedback Collection**: After the examination, collect feedback from students and invigilators on the effectiveness of the technology and accommodations provided. Use this feedback to make improvements for future examinations.
* **4.2 Examination Review**: Offer students the opportunity to review their answers post-examination if they wish to ensure that their responses were correctly recorded by the adaptive technologies.

## 5. Continuous Improvement

* **5.1 Training for Staff**: Provide ongoing training for staff and faculty on the latest developments in assistive technologies and accessibility best practices.
* **5.2 Updating Equipment and Software**: Regularly update software and equipment to incorporate the latest accessibility features and ensure compatibility with new technology.

## Conclusion

By implementing these guidelines, universities can create a supportive and equitable examination environment for students who are blind or vision impaired. This not only ensures compliance with legal standards for accessibility but also promotes an inclusive academic community.

# **4. Guidelines for Providing Examination Papers in Alternative Formats**

To effectively support students who require examination papers in alternative formats, universities should establish comprehensive guidelines that address the needs of students with visual impairments and other reading difficulties. These guidelines will help ensure that all students have equitable access to examination materials, thus maintaining the integrity and fairness of the testing process. Here’s a structured set of guidelines universities can adopt:

## 1. Assessment of Needs

* **1.1 Student Registration**: Require students needing alternative formats to register with the university’s disability support services well in advance of examination periods.
* **1.2 Needs Assessment**: Conduct a thorough assessment of each registered student's specific needs to determine the most suitable format(s) for their examination papers, including electronic formats, enlarged print, tactile graphics, braille, or coloured overlays.

## 2. Preparation of Examination Papers

* **2.1 Enlarged Print**: Provide examination papers in enlarged print for students with low vision. The size and font should be determined based on individual student needs and recommendations from visual health professionals.
* **2.2 Tactile Formats**: Convert graphs, diagrams, maps, and other visual elements into tactile formats for students who are blind or have significant visual impairments. Ensure that these are clearly interpretable and appropriately detailed.
* **2.3 Braille Papers**: Produce braille versions of the examination papers for students who are fluent braille readers. This should include all text and, where practical, raised representations of graphs or diagrams.
* **2.4 Coloured Overlays**: Provide coloured overlays for students who require them to enhance readability due to visual strain or other reading difficulties.
* **2.5 Electronic Formats**: Offer examination papers in accessible electronic formats that are compatible with screen readers, magnification software, and other assistive technologies. Ensure that these formats are secure and comply with examination standards.

## 3. Logistical Arrangements

* **3.1 Early Preparation**: Begin the adaptation of examination papers into alternative formats as early as possible to allow sufficient time for quality assurance and necessary revisions.
* **3.2 Secure Distribution**: Establish secure processes for the distribution of examination papers in alternative formats to protect the integrity of the examinations. This includes ensuring that electronic formats are distributed in a manner that prevents unauthorised access.
* **3.3 Examination Venue Setup**: Arrange for appropriate examination venues equipped to handle the specific needs associated with alternative formats, such as power outlets for electronic devices, appropriate lighting for enlarged print, and suitable desks for tactile formats.

## 4. During the Examination

* **4.1 Proctoring and Support**: Train invigilators on the specific requirements and challenges associated with alternative formats. Provide immediate support during the examination to address any issues related to the use of these formats.
* **4.2 Technical Assistance**: For electronic formats, ensure that technical assistance is readily available to address any issues with software or hardware.

## 5. Post-Examination

* **5.1 Feedback Collection**: Gather feedback from students and invigilators on the effectiveness of the alternative formats provided. This feedback is crucial for making improvements in future examination cycles.
* **5.2 Review and Adjust**: Regularly review the procedures and technologies used for providing examination papers in alternative formats. Make necessary adjustments based on feedback, technological advancements, and changes in student needs.

## Conclusion

These guidelines aim to provide a structured approach to delivering examination papers in alternative formats, ensuring that all students, especially those with visual impairments and reading difficulties, can compete on an equal footing. By meticulously planning and implementing these guidelines, universities can enhance the inclusiveness and fairness of their academic assessment processes.

# **5. Guidelines for the Use of Assistive Technology and Human Readers in Examinations**

When accommodating students who require additional support due to disabilities, assistive technology often provides a more consistent and independent examination experience compared to human readers. However, there are situations where the use of a human reader is necessary. Here are comprehensive guidelines for integrating assistive technology effectively while detailing the conditions under which human readers are employed, and how electronic papers can be implemented.

## 1. Promoting the Use of Assistive Technology

**1.1 Preference for Assistive Technology:**

* Whenever possible, the use of assistive technology should be prioritized over human readers to promote greater independence and consistency in the exam environment.
* Technologies such as screen readers, text-to-speech software, and Braille displays are recommended to facilitate exam-taking for students with vision impairments or other reading disabilities.

**1.2 Implementation of Electronic Papers:**

* Examinations should be provided in electronic formats that are compatible with assistive technologies. This allows students to use software that can read text aloud, magnify text, or translate it into Braille.
* Ensure that all electronic exam materials are formatted to be accessible, following guidelines such as those provided by the Web Content Accessibility Guidelines (WCAG).

**1.3 Training and Familiarisation:**

* Provide training sessions for students who are new to assistive technologies well before the examination period. These sessions should cover how to use the technologies effectively under exam conditions.
* Offer practice sessions with past exam papers to ensure students are fully comfortable with the technology.

## 2. Guidelines for the Use of Human Readers

**2.1 Conditions for Using Human Readers:**

* Human readers are provided only when assistive technology cannot meet the specific needs of the student, such as in exams involving complex diagrams, graphs, or where technical issues may arise.
* A needs assessment must confirm the necessity for a human reader, and this accommodation should be documented in the student’s Learning Needs Report.

**2.2 Selection and Conduct of Readers:**

* Readers must be independent individuals who are not known to the student to avoid any potential bias or conflict of interest.
* Readers should ideally have knowledge of the subject matter to ensure they can pronounce terminology correctly and handle material such as formulas, graphs, or foreign languages appropriately.
* The reader’s role is strictly to read the questions as written, without offering any interpretation, advice on which questions to attempt, or using intonation that could suggest emphasis.

**2.3 Examination Environment with a Reader:**

* The reader may also serve as the invigilator, provided there is no conflict of interest or reduction in the ability to monitor the exam properly.
* If the same person is acting as both reader and scribe, clear guidelines must be established to delineate these roles during the exam.

**2.4 Interaction During the Exam:**

* Students must request when they need questions re-read and are permitted to ask the reader to spell words or describe graphs and diagrams if needed.
* Readers should be instructed to maintain a neutral manner without adding any emphasis or commentary that could influence the student’s responses.

## 3. Documentation and Continuous Improvement

**3.1 Documentation of Accommodations:**

* All accommodations, including the use of assistive technology and human readers, must be thoroughly documented in the student’s Learning Needs Report.
* Records of training sessions, technology usage, and reader involvement should be maintained for review.

**3.2 Feedback and Adjustments:**

* Solicit feedback from students and readers post-examination to evaluate the effectiveness of the accommodations.
* Regularly review and update technology solutions and reader protocols to reflect best practices and emerging needs.

## Conclusion

These guidelines are designed to ensure that all students, particularly those with disabilities, are provided with the necessary tools and support to compete on an equal footing in an academic environment. The focus on assistive technology not only enhances independence but also aligns with modern educational practices that emphasise accessibility and equity

# **6. Guidelines for the Use of Medical Apps in Exams**

To ensure that students with specific medical needs are able to participate in examinations effectively and safely, it is crucial to establish clear guidelines for the use of electronic monitoring devices, such as mobile apps for managing medical conditions like Type 1 Diabetes. Below are detailed guidelines of a university's examination policies to address the use of such medical apps during exams.

## Electronic Monitoring Devices

**Objective:** To provide reasonable accommodations for students requiring electronic devices to monitor and manage medical conditions during examinations.

## Procedures for Use of Electronic Monitoring Devices

**1. Notification and Registration:**

* Students must register their medical device needs with the Disability Service at the start of the academic term and include this requirement in their Learning Needs Assessment.
* Prior to the examination, students should notify the invigilator about their need to access a mobile device during the exam for medical monitoring purposes.

**2. Device Handling and Security:**

* The student's mobile phone must be set to silent and flight mode before being handed over to the Senior Invigilator at the start of the examination.
* The phone will be stored in a secure location accessible only by the invigilator.

**3. Accessing the Device:**

* When a student needs to check their device, such as to monitor glucose levels via an insulin pump app, they must signal the invigilator by raising their hand.
* The invigilator will accompany the student to a designated area outside the exam room to access their phone. This ensures that the student’s use of the device is strictly for medical purposes and under supervision.

**4. Post-Use Protocol:**

* After using the device, the student will immediately hand it back to the invigilator, who will return it to the secure location.
* The student will then re-enter the exam room to continue with their examination.

**5. Time Accommodation:**

* Any time spent accessing the device will be recorded and added to the end of the student's examination time to ensure they are given the full time allocated for their exam.

**6. Privacy and Non-Distraction:**

* The examination venue for students needing access to electronic devices will generally be a smaller, shared venue to minimise disruptions to other examinees.
* Devices must be housed in a non-reflective, muted case to further reduce any potential for distraction.

## Additional Guidelines for Departmental Examinations

**Identification and Communication:**

* Academic staff are responsible for identifying students with accommodation needs based on Disability Service registrations and ensuring these students are informed about their specific accommodations well in advance of the exam.

**Venue Setup:**

* Arrange appropriate venues that cater to the needs of students with disabilities, such as providing a quiet seminar room, a low-distraction environment, or access to necessary technological aids.

**Consultation and Preparation:**

* Maintain regular communication with the Disability Service to receive updates and guidance on accommodating students effectively.
* Develop and implement backup plans to address unforeseen issues during examinations.

**Student Responsibilities:**

* Students are required to initiate contact with their department well in advance of their exams to confirm accommodations and understand the procedures involved.

## Conclusion

By adhering to these guidelines, universities can ensure that all students, particularly those with significant medical needs, are provided the necessary support to manage their conditions without compromising the integrity of the examination process. These measures aim to foster an inclusive academic environment that upholds both fairness and academic standards.

# **7. Guidelines for the Use of Reading Pens in Examinations**

For universities to effectively incorporate the use of reading pens in examinations, it is important to establish comprehensive guidelines that ensure these devices are used appropriately and maintain the integrity of the examination process. Here are suggested guidelines tailored specifically for the use of exam-specific reading pens:

## 1. Pre-Examination Preparation

* **1.1 Eligibility Confirmation**: Determine which students are eligible to use reading pens based on documented learning disabilities or other relevant impairments. Ensure that the use of such devices is justified and documented in the student’s educational accommodations.
* **1.2 Device Specification**: Provide or approve reading pens that are specifically designed for exam use. These pens should not have the capability to store data, explain meanings, or translate words.
* **1.3 Training Sessions**: Offer training sessions for eligible students to become proficient with the reading pen. This should include practice on how to effectively scan text and interpret the audio output without disrupting the examination process.

## 2. Device Testing and Setup

* **2.1 Device Testing**: Before the examination, test each reading pen to ensure it is functioning correctly, particularly its text-to-speech feature.
* **2.2 Headphone Check**: Confirm that headphones are compatible with the reading pen and do not emit any sound that could be overheard by other examinees, maintaining examination confidentiality.

## 3. Examination Venue Arrangements

* **3.1 Separate Seating**: If necessary, arrange for separate seating for students using reading pens to prevent disturbance to others from any noise or movement associated with the device.
* **3.2 Instruction to Invigilators**: Train invigilators on the specific accommodations involving reading pens, including how to assist students in case of technical difficulties and to monitor the appropriate use of these devices during the exam.

## 4. During the Examination

* **4.1 Immediate Technical Support**: Ensure that technical support is available to manage any issues that arise with the reading pens during the examination.
* **4.2 Rules of Use**: Clearly communicate to students the rules regarding the use of reading pens, including what they can and cannot do with the device during the exam. Ensure students understand that the pen should only be used for reading text and not for any prohibited functions.

## 5. Post-Examination Procedures

* **5.1 Device Collection**: Collect all reading pens at the end of the examination to prevent any misuse outside of the examination context and to prepare them for subsequent use.
* **5.2 Feedback Collection**: Gather feedback from students and invigilators about the effectiveness and any challenges encountered with the reading pens. Use this feedback to improve future guidelines and training.

## 6. Continuous Improvement

* **6.1 Review and Adjustments**: Regularly review the guidelines and procedures related to the use of reading pens in examinations based on the collected feedback and technological advancements. Make necessary adjustments to ensure that these tools continue to serve as effective aids for eligible students without compromising the examination's integrity.

## Conclusion

By adhering to these guidelines, universities can ensure that reading pens are used effectively and ethically in examinations, providing necessary support to eligible students while maintaining the fairness and integrity of the assessment process. This approach not only supports inclusivity but also upholds the standards of academic evaluations.

# **8. Guidelines for the Use of Voice Recognition Software in Examinations**

To accommodate students using voice recognition software during examinations, universities need to develop specific guidelines that ensure effective and secure use of this technology. These guidelines should address both the technical and procedural aspects of administering exams with such accommodations. Here's a detailed set of guidelines tailored for this purpose:

## 1. Pre-Examination Preparation

* **1.1 Eligibility and Training**: Confirm eligibility for students to use voice recognition software as an alternative to a scribe. Provide necessary training sessions well in advance of the examination to ensure students are proficient in using the software.
* **1.2 Equipment Setup**: Ensure that all computers used for voice recognition are equipped with the required software and meet or exceed the manufacturer’s minimum specifications.
* **1.3 Testing and Configuration**: Install and test the voice recognition software along with any required peripherals, such as USB headsets, to ensure compatibility and functionality. This should be done well before the exam day.

## 2. Examination Venue Arrangements

* **2.1 Separate Venue**: Schedule examinations that require voice recognition software in separate venues to avoid disturbances and to maintain the integrity of the examination environment.
* **2.2 Venue Setup**: Equip the venue with adequate soundproofing to prevent voice spill-over and external noise interference. Ensure the examination space is comfortable for vocal responses over extended periods.

## 3. During the Examination

* **3.1 Technical Support**: Provide immediate on-site technical support to resolve any issues related to the software or hardware during the examination.
* **3.2 Invigilator Training**: Train invigilators on the specifics of monitoring exams where voice recognition software is used, including understanding when to intervene and how to assist with technical issues.
* **3.3 Backup Plans**: Develop and communicate clear backup plans for technical failures, including the availability of a trained scribe to assist with handwriting tasks as needed (e.g., drawing diagrams or writing formulas).

## 4. Use of Personal Equipment

* **4.1 Personal Equipment Approval**: Allow students to use their own devices if deemed necessary under exceptional circumstances, subject to prior approval. These devices must be inspected and cleared of all previous data by a staff member to ensure examination security.
* **4.2 Equipment Testing**: Test personal devices with the examination setup to verify compatibility with the voice recognition software and other examination requirements.

## 5. Post-Examination Procedures

* **5.1 Feedback Collection**: Collect feedback from both students and staff involved in the examination process to assess the effectiveness of the technology and the adequacy of the support provided.
* **5.2 Review and Adjustments**: Review the feedback and make necessary adjustments to the guidelines and training processes to improve the experience in future examinations.

## Conclusion

By adhering to these guidelines, universities can ensure that students who require voice recognition software are provided with a fair, secure, and conducive examination environment. This not only facilitates their performance but also upholds the integrity and inclusivity of the academic assessment process.