BSOM Assessment System: Assessment Creation and Administration

Rationale
Assessment within the MD program at the Brody School of Medicine will occur in the context of programmatic curricular alignment such that the assessments are aligned with institutional and course/clerkship level learning objectives and learning activities. This includes formative and summative assessments, and will utilize written examinations, (MCQ, SAQ, Essay), performance assessments (OSCE and simulation), assignments (reports, projects, self-reflection), and oral examinations among the assessment tools.

Examinations administered at Brody School of Medicine follow the procedures in this document to provide a secure examination environment, consistent with what is required by the National Board of Medical Examiners. This allows consistent and accurate assessment of student knowledge fund.

Scope
The Standard Operating Procedure applies to all medical student assessments at BSOM. It outlines the procedures for creating and administering assessments to students enrolled in BSOM courses and clerkships and contains recommendations to enable the creation of a highly reliable process. The SOP also communicates expectations to key stakeholders for creating and administering assessments and affects students, staff, faculty members, and course/clerkship directors of the Brody School of Medicine who design, create, and administer assessments.

Definitions
ADA: The Americans with Disabilities Act, which prevents discrimination against people with disabilities
Accommodation: A change or adjustment from the normal curriculum or equipment format that allows an individual with a disability to access content or complete tasks to pursue a regular course of study.
BSOM: Brody School of Medicine
ECC: Executive Curriculum Committee
CD: Course or clerkship director
NBME: National Board of Medical Examiners
MCQ: multiple-choice questions, written in the single best answer format used by the NBME
Exam, examination: a high-stakes assessment that contributes greater than or equal to 5% of a course grade
Quiz: a low stakes MCQ assessment that contributes to 10-20% of the final grade to course in the foundational phase
Assessment Architecture: a planning document including the key characteristics of an assessment, such as the date, time, duration, type of assessments, identity of courses participating, number of items per course, and total number of items.
Testing Blueprint: a planning document used by the course director to ensure the balanced content representation of the MCQs used on an assessment
ExamSoft: the testing platform used for the development and administration of multiple-choice quizzes and examinations at BSOM
Secure Review: a component of ExamSoft allowing students to review the questions and answers on an assessment either immediately or at a fixed time after completing the assessment

General Sequence of Events for Blocks 1-4

Scheduling of Dates and Times for Assessments, Faculty Review and Student Review of the Assessments.
Each course director, with approval by the ECC, will designate the type of assessment that will be administered to students to appropriately measure mastery of the course/clerkship learning objectives. During the calendar planning for the academic year, the year specific curriculum committee chair and course directors identify the types of assessments to be utilized, dates and times for assessments, faculty review of the assessment, and post-administration student review. For room scheduling, the estimated duration of the examinations is 30 minutes longer than anticipated to allow for delays in starting and completing the examinations.

Because the timing and duration of the MCQ and laboratory portions of the examination for students with ADA testing accommodations (see BSOM ADA Accommodations SOP for full details) do not match the schedule of students without testing accommodations, additional planning is needed to create individualized schedules to meet the students’ needs. The Test Administrator coordinates with the course directors to create individualized schedules. This information should be communicated to the impacted students, Course Directors, and Associate Deans for Medical Education and Student Affairs by the Testing Administrator. Logistics for all assessment related items will be associated to individual learning events in the Elentra calendar.

Once the draft of the assessment plan is determined, the year specific curriculum committee chair, along with the calendar committee, reviews this plan to identify and resolve any
scheduling conflicts within and across the curriculum. After approval by the year-specific curriculum committee and the ECC, the assessment schedule is incorporated into the block calendar and published on the OME webpage.

**Determination of the Assessment Architecture**
Before the beginning of each block, each quiz and examination require an Assessment Architecture identifying: the courses participating in the examination, the types of assessment being administered (MCQ, lab practicals, short answer/essay/case analysis), the total number of examination items, the number of examination items for each participating course, the schedule for the exam day (including modifications in the schedule for students with testing accommodations), the date and time by which assessment items are due to OME, identification of courses participating in computerized exam administration, and autopsy sessions. The testing administrator will create a shell for each quiz and exam at the beginning of the block to allow for Course Directors to add questions to their assessments.

**Determination of Testing Blueprint**
Course Directors use the number of examination items indicated in the testing architecture to determine the distribution of questions and topics for each examination and quiz. The syllabus should contain a description of the distribution of questions and how it contributes to the course grade. The questions should be equitably distributed across the content to reflect the course objectives. Each question is linked to the course content using a consistent nomenclature.

**Identification of an Assessment (Course) Roster**
At the beginning of each block, the testing administrator populates each course utilizing ExamSoft with all members of the currently enrolled medical class. The testing administrator confirms the identity of any students granted testing accommodations. Additionally, the testing administrator confirms with the course directors the identity of any graduate students enrolled in the medical courses who participate in the MCQ assessments. The Office of Graduate Studies is responsible for notifying the Testing Administrator of any graduate student with testing accommodations. This information is used to determine the number of versions of an examination that must be constructed by the testing administrator and informs the creation of the seating chart. The seating charts are generated for each assessment.

**Guidelines for Developing MCQ Items**
Assessments not employing essay or free text should only use single best answer formats that require test-takers to select the single best response. Avoid use of true/false (C-type, K-type, and X-type) questions.
Best Practices for Item Construction: (Appendix A)

- Items should focus on an important concept
- Items should assess application of knowledge, not recall of an isolated fact, ideally by using clinical vignettes or analysis of data.
- Question should be able to be answered without seeing the options.
- The options should all be homogenous and plausible.
- Do not use true-false questions.
- Avoid negatively phrased A type questions - for example, all of the following are correct except or which of the following statements is not correct.
- Include as much of the item as possible in the step; the stems should be long and the options short.
- Avoid superfluous information.
- Avoid tricky or overly complex items.
- Write options that are grammatically consistent and logically compatible with the stem.
- Distractors should have the same relative length as the answer.
- Avoid use of imprecise terms—usually, frequently, often, commonly, most of the time, almost never.

Course directors must communicate expectations regarding question development, timeline for submission, and rationale to the instructors teaching in the course.

Questions written by individual instructors must be reviewed and vetted at the course/clerkship director or departmental level prior to being turned into the Testing Administrator for use as part of an assessment. The CD is responsible for the quality, relevance, and oversight of questions submitted. Course Directors are required to attend exam autopsy (post assessment) sessions that are hosted by the Office of Medical Education for each institutionally created exam.

**Uploading of Examination Questions and preparation for exam administration.**

Course directors utilizing ExamSoft work with the teaching faculty to ensure that the questions are uploaded into the previously created shell. Review of all assessment questions should be reviewed 48 business hours prior to exam administration. The testing administrator will communicate a proctoring plan 48 business hours prior to exam administration.

**Creation and Faculty Preview of the Assessment.**
At the beginning of each block, the Testing Administrator will create assessment shells. Course directors will populate assessment questions directly into the shell. The shell is available at any time to review once populated. Course Directors must review the exam and submit modifications no later than two business days prior to the assessment. Following this review, the testing administrator posts the assessment and any additional variations needed for students enrolled in part of the medical curriculum to ExamSoft using the time frames identified in the Assessment Architecture.

General Sequence of Events for Clerkships

- The clerkship director proposes an assessment architecture that is at least 60% objective evaluations including OSCE, NBME, oral exams, presentations, and/or projects and no more than 40% clinical evaluations.
- The assessment architecture is reviewed and approved by the Clinical Curriculum Committee and Executive Curriculum Committee.
- Once the assessment architecture is approved by the ECC, the clerkship director will work with the Testing Administrator, Director of Clinical Skills, and other appropriate individuals to schedule the assessments. Each clerkship is responsible for providing 1 proctor for NBME exam administration.
- Students must be available until 5pm on the days of any assessment regardless of the scheduled time of administration.

Administration of Internally Created Assessments

Prior to the assessment, the testing administrator routinely checks the testing rooms to ensure that the testing stations are functioning properly.

Day of Assessment:

- Testing administrator ensures that the rooms are open and seating chart is posted outside the exam rooms 30 minutes before the beginning of the assessment.
- Testing administrator ropes off testing area and places disposable cups at the water fountain.
- Proctors arrive at least 30 minutes before the assessment.
- All learners are expected to be in their assigned seats no later than 15 minutes prior to the start of the assessment. They should proceed to their assigned seat, log on to the testing site and download the assessment. A student will be considered late if they are not in their assigned seat 15 minutes prior to the start time.
- All learners are expected to be in their assigned seats no later than 10 minutes prior to
the start of the secure review. They should proceed to their assigned seat, log on to the testing site, enter the password, and review exam. A student will be considered late if they are not in their assigned seat 10 minutes prior to the start time.

- Standardized directions will be read aloud prior to the start of all face to face exams and secure reviews.
- Assessment password is posted at the front of the classroom at the starting time for the assessment and secure review.
- Students complete the assessment and submit when completed.
- There will be an honor code statement for students to acknowledge once logged into the computer, prior to beginning all assessments.
- Secure review for internally created assessments:
  - Occurs immediately after a quiz is completed
  - Occurs within a few days after an examination, at the date and time indicated in the testing architecture and noted on the Elentra and block calendars.
  - Students wishing to participate in the examination secure review session should be present at the examination room where they completed their examination 10 minutes prior to the start of the session. After the secure review begins, students will not be admitted late. Proctors in each testing room will have a student clarification form for students to ask for further clarification from the course director.
  - Students that are unable to attend secure review, but desired to do so, must attain an approved absence from OSA to schedule a makeup secure review at a later date
  - Makeup secure reviews must be scheduled within two calendar weeks of the initial secure review date.
  - Attendance will be documented for each secure review.
- Students having trouble logging on, downloading, starting or completing an assessment should alert a proctor to signal the need for assistance.
- Students with testing accommodations follow a schedule matching their accommodation.
- All students completing assessments are expected to be available until 5 pm on their assessment day.

Administration of NBME Exams:
- Students are expected to be available until 5 pm on assessment days.
- Administration of the NBME subject exams will follow guidelines described by the NBME.
For NBME exams required, but not contributing towards a course or clerkship grade, it is recommended that they follow the NBME guidelines for those students approved for NBME testing accommodations.

NBME exams that are required and contribute towards a course or clerkship grade will follow the ADA accommodations procedure.

NBME Testing Irregularities –
- All testing rooms should be reserved until 5pm on testing day to accommodate students.
- Technical difficulties will be addressed through instructions in the NBME Chief Proctor’s Manual.
- If exam cannot be immediately restarted, the Testing Administrator will contact the NBME and attempt to restart the exam in 30 minutes.
- If unsuccessful, the Associate Dean of Medical Education, in conjunction with other appropriate parties, will make the decision whether or not to exit the exam with specific keystrokes, found in the proctor’s manual in each testing room, to keep the first exam from being scored.
- If exam is unable to be administered on the scheduled morning, students will return at 1pm for exam administration.
- In the event that a major technical difficulty is experienced and is unable to be resolved by the final day of the clerkship, the exam will be administered on the next day of classes. If the technical difficulty occurs at a time that is followed by a significant break (greater than 1 week), every attempt will be made to allow students the opportunity to take the exam on the Monday of the week of break.

Responsibilities

There are several key stakeholders involved in the testing process. Listed below are each key stakeholder, along with their expected responsibilities and time frame for completion.

Assistant Dean of Assessment and Outcomes
- Oversees all testing operations at BSOM and reports on irregularities and compliance with question submission and test development to the Executive Curriculum Committee.
- Ensures that the Testing Administrator is trained and operating according to established procedures of BSOM.
- Distributes NBME scores and related information to the clerkship directors and coordinators.
- Monitors any failures in courses & clerkships and oversees remediation plans.
• Communicates with the Division of Academic Affairs to request non-faculty proctors.

Executive Curriculum Committee
• Responsible for oversight of assessment architecture and assessment process.

Curriculum Committee Chair
• Block Planning
  o Set/Schedule Calendar for block two months prior to the start of the block. Identify assessment days. Establish assessment architecture, including types of assessments, exam/quiz dates and durations, question allotment, exam autopsy dates, and secure review dates as appropriate.

Course Director
• Block Planning
  o Review assessment architecture (working with Curriculum Committee Chairs), exam durations, question allotment, and secure review dates.
  o Responsible for communicating the assessment architecture to all teaching faculty and overseeing each assessment in conjunction with the testing administrator.
  o Ensures that the timing for questions (90 seconds per question) is applied to blended and clearly communicated to students in the syllabus.
    o Works with year-specific Committee Chair to schedule Secure Reviews as a component of block planning.
  ▪ Beginning of Block- by the end of the first week of each block
    o Send a list of graduate students and confirm off-cycle students enrolled in the course to the testing administrator.
    o At the beginning of each block meet with Testing Administrator for testing/proctor protocol training.
  ▪ Two business days prior to assessment
    o Questions are reviewed for content and clarity at the course director and departmental level before being uploaded to the testing software.
    o Course directors identify questions to include in the assessment and submit them to the appropriate Assessment Shell.
    o Questions are tagged to USMLE content outline and course/lecture objectives.
  ▪ Two business days prior to assessment, questions are added to the assessment shell in ExamSoft to allow for the assessment to be posted.
  ▪ Faculty and Course Directors are advised to only proctor if all proctoring
opportunities have been exhausted.
- CD or a designee should attend all Secure Review sessions to answer student questions about the assessment. Faculty must rotate through all testing rooms.
- Course Directors should address all clarification forms sent to them by the testing administrator post secure review.
- No changes can be made to the approved calendar or assessment architecture without approval of the curriculum committee. These must be communicated to the testing administrator immediately.
- **Item analysis should be performed after each exam.** The following analyses should be performed and reviewed with instructors in the context of the entire exam:
  - Analysis of item difficulty
  - Analysis of item discrimination
  - Analysis of item options (point biserial)
- Course directors must attend all autopsy sessions.
- At exam autopsies, a report generated by the Assistant Dean of Assessment and/or the Testing Administrator describing omitted questions and acceptance of multiple answers for a question should be provided to the year-level curriculum committee and ECC at the end of each block.

**Clerkship Director**
- Responsible for recommending assessment architecture to the CCC and ECC for approval that meets the objectives of the clerkship.

**Instructor(s)**
- **Throughout the Block**
  - Generate questions for assessments using best practices (Appendix A).
  - Use item analysis and/or comments from previous administrations to improve quality and clarity questions prior to submission.
  - Instructor generated questions should be completed in time to allow departmental and course director review of questions prior to the submission deadline of two business days before an assessment.
- **After the Assessment**
  - Instructors submitting questions should attend the Secure Review sessions so that students’ questions can be answered.
  - Review the item analysis to revise questions for subsequent use.

**Testing Administrator**
• **Training**
  - Testing Administrator must annually review, NBME Chief Proctor Video Tutorial and the NBME Facility Readiness Checklist.
  - The Testing Administrator is responsible for developing and providing BSOM proctor training to all proctors on an annual basis offered at the beginning of each block.
    - Prepare and communicate to all proctors how to handle crises, examination emergencies, and assessment troubleshooting.
    - Provide all proctors with checklist to follow for each examination session.
    - Ensure proctors abide by FERPA guidelines at all times.
• **Check with Student Affairs at the beginning of each Block to identify students with ADA Accommodations.**
• **Disseminate SOP to students and pin in the assessment calendar in Elentra at the beginning of each academic year.**
• **Environment**
  - Administrator routinely (weekly) checks all testing rooms and ensures all equipment (computers, iPads) is functioning properly, is ready for examinations, and is secure. If a computer, partitions, lighting, HVAC, etc. is not operating properly, testing administrator contacts the proper department to resolve the issue.
• **Block Planning**
  - **Schedule Exams.**
    - Use 25 Live to reserve all rooms for in-person assessments (quizzes and exams), and in-person secure review.
    - Update and manage OME Exam and Quiz Calendar in Outlook so all involved faculty/staff have access to exam schedules and locations.
    - Coordinate and communicate schedules for students with testing accommodations to students, Course/Clerkship Directors, proctors, Associate Dean of Student Affairs and OME at the beginning of the block with a reminder email one business day prior to the exam.
    - Oversees creation of exam seating charts at the beginning of the block, including a late arrival station.
  - Develops and maintains standardized log of student breaks.
  - At the beginning of the block, identifies and schedules proctors on the OME Exam & Quiz Calendar in Outlook and confirm that proctors are available 3 business days prior to the assessment.
NBME requires one proctor per 25 students per room.
- OME provides proctors for testing of students with ADA approved testing accommodations.
  - Build assessment shells for each exam and quiz in courses at the beginning of each block labeled.
  - Send out a “friendly reminder email” 3 business days prior to an assessment to all course directors to remind them to submit questions for the upcoming assessment. The email states the OME Testing Administrator is awaiting approved questions from the course to be included in the assessment.
  - A second email will be sent to the course director, departmental chair, and Associate Dean for OME if questions are not submitted within 2 business days prior to the assessment.
  - Any courses not submitting questions within 1 business day will have the previous year’s questions added to the exam. This is meant to provide students exposure to the content.
  - Logistics and pertinent information regarding all assessments will be included in the learning event in Elentra.
  - After all questions are finished, the testing administrator will assemble and post the assessment with approved questions from each course participating.
  - Once the assessment has been reviewed and approved by all course directors, or 1 business day prior to the assessment, post the assessment according to testing blueprint and activate secure review.

- Prior to the Day of Assessment
  - For remote assessments, limited individual study spaces can be reserved at Laupus Library for those students that have extenuating circumstances that prevent testing in their personal environments. *Laupus reservations should be requested a minimum of two weeks prior to exam date.
  - Ensure that a representative from OSA is available, in their office, 15 minutes prior to each assessment start time and 20 minutes after each assessment start time.

- Day of Assessment
  - Arrive 45 minutes before the start of the assessment. Oversee the preparation of the rooms for the assessment (lighting, noise machines), posting of the seating charts outside of rooms, record start and end times, roping off secure testing area, posting of password, and distribution of note boards and dry erase pens.
Identify the communication plan between rooms and relay to proctors in each room. Administrator ensures all proctors can communicate across all rooms during examinations via email, text, or alternative mechanism described at the beginning of each assessment.

Review the download testing log to identify any problems or absences. Report any absences to Student Affairs.

Monitor all rooms for technical difficulties, irregularities, and other concerns throughout the assessment.

At times when there is more than one exam room in use for a given timeframe, the Testing Administrator will serve as the ‘circulating proctor’ observing activity outside of the testing rooms unless needed to respond to testing concerns.

Once the assessment is complete, ensure all note boards and dry erase pens are collected.

After assessment closes, examine the uploaded testing log to ensure all examinees have successfully uploaded the assessment.

Report all testing irregularities on assessments to the Deans for Medical Education, ECC and, if appropriate, to the NBME.

Post Assessment

- Maintains electronic files of seating arrangements, testing schedules, proctor assignments, test irregularities, and student breaks.
- Reports compliance with test development timeline and any irregularities to the Associate Dean for Medical Education and ECC.
- Responsible for scheduling all make-up exams in coordination with the Office of Student Affairs.

Proctors

- Day of Assessment
  - 30 minutes before the beginning of the assessment: Proctors arrive, inspect the room and contact the Test Administrator with any concerns (temperature, lighting, etc.).
  - Ensure the room is set up with all required resources (such as dry erase boards, iPads, and pens) appropriately distributed.
  - As Students arrive:
    - Instruct students entering exam room that only their one card and car keys are allowed in the secure testing area. All other personal belongings should be left in a secure area such as lockers or their personal vehicle. Ensure all electronic devices are prohibited, including smart watches. Head and ears must not be covered by hats or hooded sweatshirts/jackets. No personal/unauthorized
items are allowed in the secure testing area. Such items include but are not limited to: outerwear (all outerwear will need to be removed and inspected—no blankets will be allowed), hats, food, drinks, purses, briefcases, notebooks, notes, resources, pagers, watches, cell phones, recording devices, and photographic equipment.

- Foam earplugs are allowed and are provided by OME. If headphones are preferred, then these must be provided by the student and inspected by the proctor prior to use. Headphones with Bluetooth (or any sending/receiving capability) will not be allowed.

- Food and drink will only be allowed or assessments greater than 4 hours. There will not be a place to store food or drinks in the secure testing areas, if it is 4 hours or less of exam testing time. If food and drinks are allowed, food must be placed in a clear bag and free of any writing. All drinks must be in a container free of writing. If there is a health reason for desiring food/drinks (such as diabetes) for exams less than 4 hours, OME will make accommodations with appropriate documentation. Single use cups will be provided for use at the water fountain outside of the restrooms in the secure testing area. Students are not permitted to access any unauthorized items during exam administration.

- Students are not allowed to make notes on their dry erase note boards prior to the official start of the exam. Once the exam begins, students are permitted to make calculations or notes on the dry erase note board provided. In the event a new dry erase board is needed, the student can raise her/his hand and request to exchange the original dry erase note board for a new one.

- **At the beginning of the Exam:**
  - Post assessment password
  - Record the start and end time on the sign in/out sheet for each exam room.
  - Communicate assessment instructions to students prior to all assessments.

- **During the Assessment:**
  - Test proctors are not authorized to answer questions from examinees regarding examination content/format/questions.
  - Record the time for students arriving after the testing start time and relay that information to the Testing Administrator for inclusion in the exam report.
  - While the assessment is ongoing, the proctor is responsible for monitoring room irregularities.
  - Monitor and address distractions during assessments.
  - Maintain a standardized log of student breaks, recording the time of
departure and return.

- All note boards must be returned to the proctor prior to leaving the testing center.

**Leaving the Testing Center:**
- Students must not leave the secure testing area at any time during the administration.
- Proctors will keep a time log of student entry and exit from the exam room. Proctors will be responsible for signing students in and out on this log.
- Only one student is allowed in each restroom (male/female) at a given time.

**After the Assessment:**
- Collect note boards, dry erase pens, and clean room.
- Ensure that all dry erase note boards are accounted for by seat assignment.
- Turn in time log, dry erase note board, and dry erase pens to the Testing Administrator.

**Student Affairs**
- For each in-person assessment:
  - Ensure that a representative from OSA is available, in their office, 15 minutes prior to each assessment start time and 20 minutes after each assessment start time.

**Beginning of Block or Cohort**
- Order all NBME exams for M1-M4 courses and clerkships.
- Order and communicate availability of self-assessment vouchers for NBME assessments to clerkship coordinators for distribution to their students.
- Upload rosters to NBME testing page so testing administrator can see updated roster of students for each course and clerkship examination.
- Send list/roster of medical students with notation of students requiring accommodations to testing administrator.

**Post-Assessment**
- Upload individual scores and performance profile from NBME into Elentra for students to review.
- Communicate any failures to students to facilitate remediation plans.
- Prepare a monthly report of outstanding examinees and coordinate scheduling students for make-up exams with the Testing Administrator.

**Medical Students (Examinees)**
- Review the Brody School of Medicine Code of Professional Conduct and the Code of Student Conduct as they are always in effect.
Students are expected to be available until 5pm on all assessment days.

During an assessment, students are not allowed to communicate with students who have not completed the assessment.

On the day of Assessment

- Be in your assigned seat 15 minutes prior to the assessment. A student will be considered late if they are not in their assigned seat 15 minutes prior to the start time.
- For face-to-face assessments, if a student arrives late for an unexcused reason, they will need to acquire an late arrival slip from Student Affairs to obtain permission to be admitted into the testing room. The student’s name, date, and time of arrival will be recorded. This information will be shared with the Promotion and Review Committee. The late arriving student will be assigned a new seat upon arrival which will be a dedicated station that is strategically located to provide the least distraction for the other students who are already testing.
- The late arriving student will not be given extra time to complete the examination and will have to forfeit the time they were late. For example, if a student arrived 30 minutes late for an examination that was four hours in length, they would only receive 3.5 hours to complete the exam. The testing administrator will be responsible for monitoring start and stop times for late arriving students. In addition to the referral to the Promotion and Review Committee, the penalty will be a 2% reduction of the FINAL course grade for any unexcused late arrival per course on the examination. This penalty can be additive if multiple absences were documented throughout the course.
- For virtual assessments, the login times will be monitored. If a student logs into an assessment more than 15 minutes late for an unexcused reason, the time will be recorded and shared with the Promotion and Review Committee. In addition to the referral to Promotion and Review Committee, the penalty will be a 2% reduction of the FINAL course grade for any unexcused late arrival per course on the examination. This penalty can be additive if multiple absences were documented.
- Students must adhere to the instructions provided by the proctors administering the examination.
- Students must carefully review and agree to abide by any instructions provided or that appear at the start of the examination session.

Students can ask for clarifications during secure review for internally created exams only. The purpose of student clarifications is to identify students’ critical thinking/processing of questions and answer choices and to help provide clarifications to students’ misperceptions.

- Student clarifications can only be submitted during the secure review and not after. There will be a sheet present at the secure review for students to fill out with one of the proctors in the room. This process eliminates the work needed.
by the Student Representative and avoids placing them between students and faculty.

- No references, other than those allowed in the examination room, may be utilized for the purpose of substantiating a clarification.
- Forms that are illegible may not be considered by the course director.
- Clarifications will not be accepted under any circumstances once you leave the exam room.
- All course directors will review item analysis and make determinations for any changes to grade such as dropping questions, accepting multiple answers, wrong answer coded, etc. based on item performance.

- Students are not permitted to ask proctors or other personnel questions regarding examination content, format, or other questions.
- Students are not allowed to leave the testing room with any notes, note boards, and/or dry erase pens.
- No unauthorized personal items are allowed in the secure testing areas. Such items include but are not limited to hats, hoodies, purses, blankets, briefcases, notebooks, notes, resources, pagers, watches, cell phones, recording devices, and photographic equipment. Foam earplugs are allowed. OME will supply foam earplugs for students. If earmuffs are preferred, these must be provided by the student and inspected by the proctor prior to use. Headphones with Bluetooth capabilities or other sending/receiving capabilities are not allowed.

- Outerwear needs to be removed and inspected prior to entry into the secure testing area.
- Students are not allowed to make notes on their note board prior to the official start of the exam. Once the exam begins, students are permitted to make calculations or notes only on the note board provided. In the event a new note board is needed, the student can raise her/his hand and request to exchange the note board for a new one.
- Students are not allowed to access any unauthorized items during breaks taken in the middle of an assessment.

**Procedures for Implementation**

This procedure is reviewed and approved by the Curriculum Committees, including the Executive Curriculum Committee, M1 Curriculum Committee, M2 Curriculum Committee, and the Clinical Curriculum Committee every three years.

This procedure is disseminated by the Office of Medical Education to students and teaching faculty/administration as part of a “student handbook” during orientation each year.
Applicable Laws, Regulations & Standards

LCME Standards for Accreditation of Medical Education Programs Leading to the MD Degree: Published March 2019; Standard 9, Element 8, and Standard 3, Element 5.

Appendices

Appendix A

Recommendations from the Ad-hoc Testing Committee on Question Construction

Content adapted from the NBME Item Writing Guide. Additional information can be accessed http://www.nbme.org/publications/item-writing-manual.html

Why should learners be tested?
- Communicate material that is important
- Motivate learning
- Identify learning needs
- Assess obtainment of learning objectives
- Determine grades
- Identify areas where instruction can be improved

What should be tested?
- Exam content should match course/clerkship and session objectives
- Important topics should be emphasized
- The testing time devoted to each topic should reflect the relative importance
- The sample of items should be representative of the instructional goals.

Recommendation #1: The committee recommends that assessments not employing essay or free text should only use single best answer formats that require test-takers to select the single best response. Avoid use of true/false (C-type, K-type, and X-type) questions.

Background: One Best Answer (A-type) questions consist of a stem (e.g. a clinical case presentation) and a lead in question, followed by a series of choices, typically one correct answer and three to four distractors. When written correctly, incorrect options do not have to be entirely wrong, but less correct than the keyed option.

Why Single Best Answer?
- Prevents test-taker from having to guess author’s intent
- More efficient/easier to write as incorrect options do not have to be entirely wrong
• Same stem can be paired with different lead-ins to create item sets (diagnosis and management)

Best Practices for Item Construction:
• Items should focus on an important concept
• Items should assess application of knowledge, not recall of an isolated fact, ideally by using clinical vignettes or analysis of data.
• Question should be able to be answered without seeing the options.
• The options should all be homogenous and plausible.
• Do not use true-false questions.
• Avoid negatively phrased A type questions- for example, all of the following are correct except or which of the following statements is not correct.
• Include as much of the item as possible in the stem; the stems should be long and the options short.
• Avoid superfluous information.
• Avoid tricky or overly complex items.
• Write options that are grammatically consistent and logically compatible with the stem.
• Distractors should have the same relative length as the answer.
• Avoid use of imprecise terms- usually, frequently, often, commonly, most of the time, almost never.

Recommendation #2: Item analysis should be performed after each exam. The following analyses should be performed and reviewed in the context of the entire exam:
  o Analysis of item difficulty
  o Analysis of item discrimination
  o Analysis of item options

Avoid flaws related to testwiseness:
• Grammatical clues- one or more distractors don’t follow grammatically from the stem
• Logical cues- a subset of the options is collectively exhaustive
• Absolute terms- terms such as always or never are in some options
• Long correct answer- correct answer is longer, more specific, or more complete than other options
• Word repeats- a word or phrase is included in the stem and in the correct answer
• Convergence strategy- the correct answer includes the most elements in common with the other options

Avoid flaws related to irrelevant difficulty:
• Options are long, complicated, or double
• Numeric data are not stated consistently
• Terms in the options are vague (rarely, usually)
• Language in the options is not parallel
• Options are in a nonlogical order
• None of the above is used as an option
• Stems are tricky or unnecessarily complicated
• The answer to an item is hinged to the answer of a related item.

Guidelines for Writing Foundational and Clinical Science Items:
• An assessment blueprint should be developed for each assessment to keep item writers focused on important topics and key content.
• Test application of knowledge using clinical vignettes or experimental vignettes to provide context to the question being asked.
• Focus items on common or potentially catastrophic problems; Avoid “zebras.”
• Pose decision-making tasks appropriate for the level of training.
• Questions should focus on specific tasks that students must be able to undertake at the next stage of training: What is the most likely diagnosis, additional labs needed, formulate the next step in management.
• Focus on areas in which clinical reasoning mistakes are commonly made.
• Use of vignettes ensures that the student not only knows the information but can apply it to hypothetical situations.

Writing one-best-answer items
• Whenever possible, items should be written with a clinical stem.
• Clinical vignettes should begin with presenting problem of a patient, followed by the history including duration, physical findings, results, initial treatment, subsequent findings.
• Vignette may only include a portion of this information but should be supplied in that order.
• Stem lead-in should pose a clear question that the examinees should be able to answer without looking at the options.
• Vignettes should avoid red herrings and lying patients.

Examples of types of foundational and clinical lead-ins:
• Which of the following is the most like cause/mechanism of this effect?
• Which of the following is the most likely causal infectious agent?
• This patient most likely has a defect in which of the following?
• This patient most likely has a defect in which of the following enzymes?
• Which of the following cytokines is the most likely cause of this condition?
• Which of the following structures is at greatest risk for damage during this procedure?
• The most appropriate medication for this patient will have which of the following mechanisms of action?
• Which of the following factors in the patient’s history most increased his/her risk for developing this condition?
• Which of the following is the most likely explanation for these findings?
• Which of the following is the most likely location of the patient’s lesion?
• Which of the following is the most likely pathogen?
• Which of the following findings is most likely to be increased/decreased?
• Which of the following is the most appropriate intervention?
• For which of the following conditions is the patient at greatest risk?
• Which of the following is most likely to have prevented this condition?
• Which of the following is the most appropriate next step in management to prevent morbidity/mortality/disability?
• Which of the following is the most likely diagnosis?
• Which of the following is the most appropriate next step in diagnosis?
• Which of the following is most likely to confirm the diagnosis?
• Which of the following is the most appropriate initial or next step in patient care?
• Which of the following is the most effective management?
• Which of the following is the most appropriate pharmacotherapy?
• Which of the following is the first priority in caring for this patient?

Example of grammatical cues:
A 60-year-old man is brought to the emergency department by the police who found him lying unconscious on the sidewalk. After ascertaining that the airway is open, the first step in management should be intravenous administration of
A. Examination of CSF
B. Glucose with vitamin B1 (thiamine)
C. CT scan of the head
D. Phenytoin
E. Diazepam
Options A and C do not follow logically from the stem.

Logical Cues:
Crime is
A. Equally distributed among the social classes
B. Overrepresented among the poor
C. Overrepresented among the middle class and rich
D. Primarily an indication of psychosexual maladjustment
E. Reaching a plateau of tolerability for the nation

Options A, B, and C include all possibilities so the student knows that one must be correct.

**Absolute terms:**

In patients with advanced dementia, Alzheimer’s type, the memory defect
A. Can be treated adequately with phosphatidylcholine
B. Could be a sequel of early parkinsonism
C. Is never seen in patients with neurofibrillary tangles at autopsy
D. Is never severe
E. Possibly involves the cholinergic system

Options C and D can be eliminated based on the absolute terms.

**Word Repeats:**

A 58-year-old man with a history of heavy alcohol use and previous psychiatric hospitalizations is confused and agitated. He speaks of experiencing the world as unreal. This symptom is called
A. Depersonalization
B. Derailment
C. Derealization
D. Focal memory deficit
E. Signal anxiety

Unreal appears in the stem and in the options.

### Appendix B

**Brief Guidelines for BSOM Examinations**

1. **Proctor assignments**
   a. Proctors (one proctor per 25 students per room) are identified no less than 3 business days prior to an assessment.
   b. Proctors should arrive 30 minutes prior to the start of the assessment.

2. **The Day Before the Assessment**
   a. OME prepares the room and computers
      i. Rooms are clean and organized and ready to administer an assessment.
      ii. Computers are checked to ensure all updates and NBME certifications are
3. The Day of Testing
   a. 30 minutes prior to the exam, the Testing Administrator or designee opens the rooms and prepares the room for the exam (lighting, noise machines).
   b. 30 minutes before the start of the exam, OME posts the seating chart.
   c. 30 minutes prior to exam time proctors arrive at the testing rooms.
   d. Proctors inspect the room and contact OME with any concerns (temperature, lighting, etc.).
   e. All electronic devices are to be left in personal vehicle or locker, including “SMART” watches.
   f. Head and ears are not covered by hats or hooded sweatshirts/jackets.
   g. Proctors oversee the distribution of note boards and dry erase pens.
   h. At the beginning of the exam, proctors post the examination password.
   i. 10 minutes after the start of the exam, OME reviews the download testing log to identify any problems or absences.
   j. As examinees finish, proctors collect the used numbered note boards and dry erase pens and ensure that all note boards are collected based on the numbering.
   k. After the examination, OME examines the upload testing log to ensure all examinees have successfully closed out the testing session.
   l. After the testing session, OME ensures that rooms are cleaned, and personal articles removed.

4. Examinee Responsibilities
   a. Students are expected to be available until 5pm on all assessment days.
   b. Examinees need to be in their assigned seats 15 minutes before the assessment begins.
   c. A student will be considered late if they are not in their assigned seat 15 minutes prior to the start time.
      i. For face-to-face assessments, if a student arrives late for an unexcused reason, they will need to acquire an late arrival slip from Student Affairs (in the testing center) to obtain permission to be admitted into the testing room. The student’s name, date, and time of arrival will be recorded. This information will be shared with the Promotion and Review Committee. The late arriving student will be assigned a new seat upon arrival which will be a dedicated station that is strategically located to provide the least distraction for the other students who are already testing.
d. The late arriving student will not be given extra time to complete the examination and will have to forfeit the time they were late. For example, if a student arrived 30 minutes late for an examination that was four hours in length, they would only receive 3.5 hours to complete the exam. The testing administrator will be responsible for monitoring start and stop times for late arriving students. In addition to the referral to the Promotion and Review Committee, the penalty will be a 2% reduction of the FINAL course grade for any unexcused late arrival per course on the examination. This penalty can be additive if multiple absences were documented.

e. For virtual assessments, the login times will be monitored. If a student logs into an assessment more than 15 minutes late for an unexcused reason, the time will be recorded and shared with the Promotion and Review Committee. In addition to the referral to Promotion and Review Committee,

f. the penalty will be a 2% reduction of the FINAL course grade for any unexcused late arrival per course on the examination. This penalty can be additive if multiple absences were documented.

Personal Items:

- The only items permitted in the secure testing area is the ECU one card and car keys. No personal/unauthorized items are allowed in the secure testing area. Such items include but are not limited to, outerwear (all outerwear will need to be removed and inspected – no blankets will be allowed), hats, food, drinks, purses, briefcases, backpacks, notebooks, notes, resources, pagers, watches, cell phones, recording devices, and photographic equipment.
- Students are not permitted to access any unauthorized items during the exam administration.

Noise Reduction Devices:

- Foam earplugs are allowed. OME will supply foam earplugs for students. If headphones are preferred, these must be provided by the student and inspected by the proctor prior to use. Headphones with Bluetooth (or any sending/receiving capability) will not be allowed.

Written Notes:

- Each student will be issued a note board and a dry erase pen for use during testing.
- Students are not allowed to make notes on their note board prior the official start of the
exam. Once the exam begins, students are permitted to make calculations or notes only on the note board provided. In the event a new note board is needed, the student can raise her/his hand and request to exchange the original note board for a new numbered note board.

Instructions:
- Students must adhere to the instructions provided by the proctors administering the examination.
- Students must carefully review and agree to abide by any instructions provided or that appear at the start of the examination session.

Leaving the Testing Room:
- Students must not leave the secure testing area at any time during the administration.
- Proctors will keep a time log of student entry and exit from the exam room. Proctors will be responsible for signing students in and out on this log.
- Only one student is allowed in each restroom (male/female) at a given time.

Absences:
- An excused absence for an assessment must be requested prior to the start of the assessment. Late requests will not be considered.

During every exam, the Brody School of Medicine Code of Student Conduct is in effect. Any testing irregularities will be brought to the attention of the Associate Dean for Student Affairs and processed accordingly. Any testing irregularity on a NBME exam must be reported to the NBME as outlined in their policy: [http://www.nbme.org/students/Subject-Exams/security.html](http://www.nbme.org/students/Subject-Exams/security.html).

**IN CASE OF EMERGENCY**

Fire alarms cause testing to be halted immediately. Students should not close out the examinations, but should leave them open, exit the room and proceed to the gathering point assigned for their class. Students should not discuss the examination during this time, as it may be possible to resume the examination.