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New and Important 2015-16

Please welcome Sherrie Fornoff, who has replaced Theo Karpovich as the Year 1 coordinator. In addition, Inbal Braunstein is replacing Sewon Kang as Dermatology section leader, and David Cooke and Aniket Sidhaye are taking over the Endocrine section from Fred Wondisford. In Renal, Daphne Knicely is joining Mike and Steve as section co-director. Isabel Green is moving to the Mayo Clinic. Her replacement as Repro leader has not been appointed yet.

The end of printed handouts

This is the last year that handouts will be printed for Year 2 GTS, and no handouts will be printed for Year 1. Year 2 leaders should encourage students NOT to opt-in for printing. Harry Goldberg has produced tutorials for the many free programs that facilitate note-taking on PDFs (http://oac.med.jhmi.edu/ittutorial). Faculty must submit handouts at least one week in advance and NOT CHANGE them after submission. Handouts will be posted on BB and on a SOM DropBox folder that students can access but not modify. Notify me and the coordinator if there are specific handouts that require paper copies (E.G. worksheets that the students will need to write on).

Electronic lectures

The Pedagogy Working Group has produced a short how-to document to encourage best practices for electronic lectures (Appendix G)

Virtual Microscopy

VM remains a weak point in the course. The Pedagogy Working Group has also produced a short how-to document to encourage best practices for VMs. Meet with your VM leaders and review this document sufficiently in advance to revise the sessions and improve their quality. (Appendix H)

Lecture deadlines for students

As more lectures are being delivered electronically and more students listen to recorded versions of live lectures, it becomes essential that students are prepared for small group. Students will be told that the electronic or recorded lectures must be completed prior to any small group that builds on that material. They can’t be saved up for a convenient weekend.

Other deadlines

We will post due dates on Oasis to provide a uniform place for students to check deadlines and assignment due dates. These will be posted by Sherrie or Terri, but make them aware of any such due dates (besides exams) for assignments in your section.

Small group narrative feedback

One of our LCME citations addresses the lack of narrative feedback in the preclinical courses. In GTS we will address this by providing narrative feedback whenever a small group leader meets a sufficient number of times to make individualized observations on most of the students. This will be provided
through an E*value form that each small group leader must complete on all students in their group within one week of course completion. These focus on communication and professionalism, including whether they were prepared for the session. I will notify you if your section will need to do this but you will need to make sure your small group leaders are aware and comply.

Exams

1. We would like to be able to administer remediation exams that are different from the section exam, but equally difficult. To allow that, please submit 20-25 NEW questions each year, for the next 4 years. These questions will be administered, but not included in the grade the first year, and then held in reserve in subsequent years. Data from the first administration will allow us to know how difficult each question is so we can prepare an equivalent remediation exam.

2. Students who show up late for exams disturb the students who have started, and may require repeating any special instructions that the rest of the class received. This became egregious last year, with some students arriving hours late. Therefore, any student who arrives more than 15 minutes late for an exam will need to take a makeup exam and will receive an incomplete. Report these students to me.

End of section evaluations

Rather than requesting optional evaluations for 2% extra credit, which mostly the near-failing and strongly opinionated students complete, we will now require evaluations from a rotating sample of 25% of the class. Other students will always have the option of submitting an evaluation if they choose. This will reduce the overall burden of surveys and produce more representative opinions. There will be no extra credit for completing the evaluation.

Early warning system

We are putting in place a tripartite early warning system to alert us to students that are having difficulty with academics, teamwork, or professionalism. The elements include:

1. A spreadsheet compiling all course section grades on all students over the first 2 years, with a dashboard indicating when there have been multiple near-failures.
2. The narrative feedback from small groups described above.
3. A spreadsheet of missed deadlines and assignment due dates. This is covered by a new accountability policy, attached. (Appendix I)

Early warning flags will lead to notification of a student’s college’s advisor, who can meet and determine the source of the problem and work toward a solution. The source may vary widely with any individual student’s strengths, weaknesses, and immediate social circumstances. The emphasis is on helping the student, not punishing them.

Non-exam components of the final grade

Continue to limit non-objective measures to no more than 10% of the final grade. Objective measures can include quizzes or mid-terms in addition to the final exam.

Small group attendance

Do not include attendance as a component of your numerical grading scheme. Attendance is counted separately.
Course Objectives

Short version

The GTS course is the central, unifying course for the preclinical training at JHSOM. It begins in early January of the first year and continues until mid-February of the second year. We have >1000 hours of in-class time and >350 contributing faculty. Detailed, formal course objectives are listed below. For planning purposes, the following key points should be kept in mind:

- The GTS course encompasses the fields of physiology, pathophysiology, pharmacology, and pathology as covered in a more traditional medical school curriculum, and the scale range from genetics to sociology.
- Special emphasis is placed on:
  - Genetic variability between patients which affects health, disease risk, or response to therapy
  - Environment/patient interactions and their health effects
  - Individuality, rather than comparisons between prototypical “normal” and “ill.”
- Biomedical and behavioral horizontal strands should be incorporated where appropriate
- Passive lecture time should be minimized in favor of active and small group learning.

Complete Course Objectives

Students completing Genes to Society should be able to:

A) Define the normal structure and function of the human body as a basis for understanding health, disease, and treatment... now and in the future...

1. GENETICS & MOLECULAR BIOLOGY: Identify the major genes, gene products, and molecular biomechanisms underpinning normal structure and function of the human body, discussing their role in current and future understanding of health, disease, and treatment.

2. ANATOMY, HISTOLOGY, & CELL BIOLOGY: Label the gross anatomic components of the human body, both pathologically and radiographically. Name the cellular and sub-cellular components of each organ system, describing their structure and function.

3. PHYSIOLOGY: Discuss the functional and integrative relationships both (i) between sub-cellular components of individual organ systems, and (ii) across different organ systems, as a basis for understanding both organ-system specific and multi-system diseases.

4. DEVELOPMENT & AGING: Describe the key principles and mechanisms that govern development and aging of the human body and discuss their relationship to pediatric and adult health, disease, and recovery of function.

B) Identify major disorders affecting the human body and their impact, emphasizing scientific foundations of diagnosis and treatment...

5. NOSOLOGY: Categorize human diseases and syndromes by (i) etiology, (ii) pathology, (iii) pathophysiology, and (iv) phenomenology, recognizing key disorders as “Common,” “Catastrophic,” or “Clarifying.” Analyze the relationship between “health” and “disease,” recognizing the spectrum of variability in both “wellness” and “illness,” and its genetic underpinnings.
6. **DISEASE (PATHOLOGY & PATHOPHYSIOLOGY):** Recognize and describe the molecular, cellular, and tissue pathology of major human diseases. Describe important pathomechanisms of disease, and, where possible, the relationship between mechanisms and clinical manifestations.

7. **PATHOGENS (MICROBIOLOGY) & EXTERNAL FACTORS:** Identify major infectious pathogens, toxins, and physical causes of disease in the environment, describing the mechanisms by which their interaction with the normal human host lead to disease and form a substrate for treatment.

8. **DIAGNOSIS (REASONING & TESTING):** Apply knowledge of pathoanatomy and pathophysiology to logically approach bedside disease localization and etiologic identification. Discuss the role of laboratory and imaging-based diagnostic modalities in the evaluation of human disease, emphasizing appropriate test selection and interpretation of results.

9. **TREATMENT (PHARMACOLOGY & THERAPEUTICS):** Apply knowledge of pathophysiology and pharmacology to rationally approach disease prevention and treatment. Describe general preventive and treatment strategies (‘common’), initial management (‘catastrophic’), and mechanistic underpinnings (‘clarifying’) of therapy for key disorders, emphasizing pharmacologic, electromagnetic (radiotherapy, etc.), mechanical (surgical, endovascular, manipulative, etc.), restorative (genetic, regenerative, prosthetic, rehabilitative, etc.), and behavioral interventions.

10. **IMPACT (SOCIOLOGY, EPIDEMIOLOGY & PUBLIC HEALTH):** Estimate the impact of disease on patients, families, and society through an appreciation of both individual and societal burden, identifying ethical, medicolegal, economic, and public policy issues that surround treatment of human disease around the world. Assess the influence of social forces, public perception, and personal values on human health and healthcare delivery.

11. **MEDICAL RESEARCH:** Demonstrate a working knowledge of research methods related to mechanistic and evidence-based understanding of human disease and its treatment. Apply knowledge of basic and clinical research to envision new approaches to diagnosis and treatment of human disease.

C) **Develop and demonstrate the core skills required of all physicians essential to effective medical problem solving, communication, and lifelong learning...**

12. **LANGUAGE OF MEDICINE:** Demonstrate appropriate and effective use of medical terminology related to the science of health and disease across organ systems, as a foundation for professional communication.

13. **PROBLEM-SOLVING & COMMUNICATION:** Demonstrate problem-solving skills, teamwork, and appropriate professional attitudes and behaviors through the processes of small group, team learning, and peer teaching.

14. **HEALTH SCIENCES INFORMATICS & LIFELONG LEARNING:** Utilize appropriate tools for seeking, evaluating, and organizing medical knowledge and scientific evidence, while demonstrating an awareness of the behavioral attributes of self-directed, life-long learning.

15. **LEADERSHIP & EXCELLENCE:** Cultivate personal qualities and critical thinking skills essential to leadership and excellence in medicine, including using gaps in scientific knowledge (medical ignorance and medical error) as a motivator for change, tempering scientific skepticism with realism, and self-awareness and reflection in the learning and leadership process.
Contact information

Course Leadership

<table>
<thead>
<tr>
<th>Title</th>
<th>Name</th>
<th>Responsibilities</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associate Dean for Undergraduate Medical Education</td>
<td>Nancy Hueppchen MD</td>
<td>Overall management of the curriculum and medical student experience</td>
<td><a href="mailto:nhueppc1@jhmi.edu">nhueppc1@jhmi.edu</a></td>
</tr>
<tr>
<td>Assistant Dean for Undergraduate Medical Education and GTS Course co-Director</td>
<td>Henry Fessler MD</td>
<td>GTS buck stops here.</td>
<td><a href="mailto:hfessler@jhmi.edu">hfessler@jhmi.edu</a></td>
</tr>
<tr>
<td>GTS Course co-Director</td>
<td>Michael Borowitz MD</td>
<td>Unless it stops here</td>
<td><a href="mailto:mborowit@jhmi.edu">mborowit@jhmi.edu</a></td>
</tr>
<tr>
<td>Assistant for 1st year GTS sections</td>
<td>Sherrie Fornoff</td>
<td>Manages Blackboard, Oasis, DropBox, prepares handouts, keeps attendance records, grades</td>
<td><a href="mailto:sfornoff@jhmi.edu">sfornoff@jhmi.edu</a></td>
</tr>
<tr>
<td>Assistant for 2nd year GTS section</td>
<td>Terri Hennel</td>
<td>Manages Blackboard, DropBox and Oasis content, prepares handouts, keeps attendance records, grades</td>
<td><a href="mailto:thennel1@jhmi.edu">thennel1@jhmi.edu</a></td>
</tr>
<tr>
<td>Assistant Dean for Academic Computing</td>
<td>Harry Goldberg PhD</td>
<td>Oversight and troubleshooting for classroom technology, preparation of electronic media</td>
<td><a href="mailto:goldberg@jhmi.edu">goldberg@jhmi.edu</a></td>
</tr>
<tr>
<td>Office of Curriculum Instructional designer</td>
<td>Violet Kulo</td>
<td>Exam preparation and data management</td>
<td><a href="mailto:vkulo1@jhmi.edu">vkulo1@jhmi.edu</a></td>
</tr>
<tr>
<td>Academic computing instructional designer</td>
<td>Susan (Mrozowski) Kerfoot</td>
<td>Blackboard software support, teaching technology support</td>
<td><a href="mailto:smroz@jhmi.edu">smroz@jhmi.edu</a></td>
</tr>
</tbody>
</table>

Note: I am happy to meet with any section leader to discuss planning or execution of their section. Contact me at hfessler@jhmi.edu. If you are new to the course, count on it.
<table>
<thead>
<tr>
<th>GTS Block</th>
<th>Section</th>
<th>Leader(s)</th>
<th>Contact(s)</th>
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<tbody>
<tr>
<td>1</td>
<td>Immunology</td>
<td>Jonathan Schneck</td>
<td><a href="mailto:jschnec1@jhmi.edu">jschnec1@jhmi.edu</a></td>
</tr>
<tr>
<td></td>
<td>Microbiology/ID</td>
<td>Khalil Ghanem</td>
<td><a href="mailto:kghanem@jhmi.edu">kghanem@jhmi.edu</a></td>
</tr>
<tr>
<td></td>
<td>Dermatology</td>
<td>Inbal Braunstein</td>
<td><a href="mailto:ibrauns2@jhmi.edu">ibrauns2@jhmi.edu</a></td>
</tr>
<tr>
<td></td>
<td>Heme/Onc</td>
<td>Michael Borowitz (section leader)</td>
<td><a href="mailto:mborowit@jhmi.edu">mborowit@jhmi.edu</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Richard Ambinder</td>
<td><a href="mailto:rambind1@jhmi.edu">rambind1@jhmi.edu</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Robert Brodsky</td>
<td><a href="mailto:rbrodsky@jhmi.edu">rbrodsky@jhmi.edu</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>William Nelson</td>
<td><a href="mailto:bnelson@jhmi.edu">bnelson@jhmi.edu</a></td>
</tr>
<tr>
<td>2</td>
<td>BMB</td>
<td>Dean Mackinnon</td>
<td><a href="mailto:Dmackin1@jhmi.edu">Dmackin1@jhmi.edu</a></td>
</tr>
<tr>
<td></td>
<td>Nervous system/</td>
<td>Nicoline Schiess</td>
<td><a href="mailto:Nschies1@jhmi.edu">Nschies1@jhmi.edu</a></td>
</tr>
<tr>
<td></td>
<td>Special Senses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Pulmonary</td>
<td>David Hager</td>
<td><a href="mailto:Dhager1@jhmi.edu">Dhager1@jhmi.edu</a></td>
</tr>
<tr>
<td></td>
<td>Nephrology</td>
<td>Steven Sozio</td>
<td><a href="mailto:ssozio@jhmi.edu">ssozio@jhmi.edu</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Michael Choi</td>
<td><a href="mailto:Mchoi3@jhmi.edu">Mchoi3@jhmi.edu</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Daphne Knicely</td>
<td><a href="mailto:harringtond@jhmi.edu">harringtond@jhmi.edu</a></td>
</tr>
<tr>
<td></td>
<td>Cardiovascular</td>
<td>Edward Kasper</td>
<td><a href="mailto:ekasper@jhmi.edu">ekasper@jhmi.edu</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thomas Traill</td>
<td><a href="mailto:ttraill@jhmi.edu">ttraill@jhmi.edu</a></td>
</tr>
<tr>
<td>4</td>
<td>GI/Liver</td>
<td>John Clarke</td>
<td><a href="mailto:john.clarke@jhmi.edu">john.clarke@jhmi.edu</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jamie Hamilton</td>
<td><a href="mailto:jpahamilton@jhmi.edu">jpahamilton@jhmi.edu</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Robert Anders</td>
<td><a href="mailto:rander54@jhmi.edu">rander54@jhmi.edu</a></td>
</tr>
<tr>
<td></td>
<td>Endocrine</td>
<td>David Cooke</td>
<td><a href="mailto:asidhaye1@jhmi.edu">asidhaye1@jhmi.edu</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aniket Sidhaye</td>
<td><a href="mailto:dcooke@jhmi.edu">dcooke@jhmi.edu</a></td>
</tr>
<tr>
<td></td>
<td>Reproduction</td>
<td>Ann Lawler</td>
<td><a href="mailto:alawler@jhmi.edu">alawler@jhmi.edu</a></td>
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<tr>
<td></td>
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<td>TBD (section leader)</td>
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<td></td>
<td>Musculoskeletal/</td>
<td>Edward McCarthy</td>
<td><a href="mailto:mccarthy@jhmi.edu">mccarthy@jhmi.edu</a></td>
</tr>
<tr>
<td></td>
<td>Rheumatology</td>
<td>Alan Gelber (section leader)</td>
<td><a href="mailto:agelber@jhmi.edu">agelber@jhmi.edu</a></td>
</tr>
</tbody>
</table>
Weekly schedule template

The times available to GTS are shown below; schedule will vary for exams and university holidays. Times marked “GTS” may be used any combination of teaching methods or as free time for e-Lectures, preparation, and studying. Times not designated for GTS should not be used for any scheduled course activities. These times can be used for required e-Lectures or readings, but be considerate of time needed for any such assignments. Limit to <2 hours/day, as students will also be studying and working on other assignments and projects.

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<td>Longitudinal Clerkship</td>
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Course calendar overview

Dates are for 2015-16, as shown below. +1 indicates last day reserved for exam only.

<table>
<thead>
<tr>
<th>Block</th>
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<th>Starts</th>
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<tr>
<td>Year 1</td>
<td>Immunology</td>
<td>4 Jan</td>
<td>21 Jan</td>
<td>12+1</td>
<td>MLK is 18 January</td>
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<td>18 Feb</td>
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<td>Dermatology</td>
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<td>23 Feb</td>
<td>3</td>
<td>No WS; Exam on weekend</td>
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<td>Heme/Onc</td>
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<td>22 Mar</td>
<td>16+1</td>
<td>Match Day 3/18</td>
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<td>BMB</td>
<td>11 April</td>
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<td>Total NSS = 33</td>
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<td>Neuro/Special Senses</td>
<td>12 April</td>
<td>May</td>
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<td>Integrated with NSS</td>
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<td>6 June</td>
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<td>Turtles 5/13; Memorial Day 5/30</td>
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<td>Year 2</td>
<td>Pulmonary</td>
<td>17 August</td>
<td>2 Sept</td>
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<td>25 Nov</td>
<td>17+1</td>
<td>Thanksgiving 11/26-11/30, Th-M</td>
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<td>12 Feb</td>
<td>8+1</td>
<td>CBSE 2/6 (Sat); MSRD 2/5</td>
</tr>
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</table>

### Holidays and vacations 2015-16

- **17 August, 2015**: Classes begin
- **7 September, 2015**: Labor Day
- **26 November – 30 November, (Y2)**: Thanksgiving break (Th-Mon, Year 2)
- **19 December, 2015 – 3 January, 2016**: Winter break
- **18 January, 2016**: MLK Day
- **12 February, 2016**: GTS ends (Year 2)
- **26 March – 3 April, 2016**: Spring break (Year 1)
- **30 May, 2016**: Memorial Day
- **6 June, 2016**: GTS ends (Year 1)
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- **School Closed/ Holidays**
- **Exam date underlined**
- **GTS: Immunology**
- **GTS: Micro-ID**
- **GTS: Derm**
- **GTS: Heme-Onc**
- **GTS-NSS**
- **GTS-BMB (integrated with NSS)**
- **TIME**

Revised July 15, 2014
# GTS Year 2

## 2015-2016 School Calendar

### August 2015

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- **School Closed/ Holidays**
- **Pulmonary**
- **Renal**
- **Cardiovascular**
- **GI/Liver**
- **Endocrine**
- **Repro**
- **Musculoskeletal**

2/6/16: NBME CBSE

Other exam dates underlined

---

Revised July 15, 2014

12
# Year 1 Workshops

## AY 2015-16

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* Preparation precedes beginning of section
# Year 2 Workshops
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<td>8/19</td>
<td>8/26</td>
<td>(52-53-54)</td>
</tr>
<tr>
<td></td>
<td><em>Exam – No workshop</em></td>
<td>9/2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mesothelioma</td>
<td>8/26</td>
<td>9/9</td>
<td>(55-56-57)</td>
</tr>
<tr>
<td>Renal</td>
<td>Chronic Kidney Disease</td>
<td>9/9</td>
<td>9/16</td>
<td>(1-2-3)</td>
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<tr>
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<td>9/16</td>
<td>9/23</td>
<td>(4-5-6)</td>
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<td>10/7</td>
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<td>Health Care Disparities and Patterns of Care</td>
<td>10/7</td>
<td>10/14</td>
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<td>10/14</td>
<td>10/21</td>
<td>(10-11-12)</td>
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<td>10/28*</td>
<td>11/4</td>
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<td>11/11</td>
<td>11/18</td>
<td>(22-23-24)</td>
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<td>12/16</td>
<td></td>
<td></td>
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<td>1/13</td>
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<td></td>
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<td>1/27</td>
<td></td>
<td></td>
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<td>2/3</td>
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</tbody>
</table>

* Preparation precedes beginning of section

2 Preparation is 2 weeks prior to presentation

*Revised 7/21/15*
Deadlines

In addition to course administration and teaching, all section leaders must deliver the following course materials:

**One month prior to start of section –**
All scheduled course events, lecture titles, times, and speakers sent to 1\textsuperscript{st} or 2\textsuperscript{nd} year administrator. They will load into Oasis.

**One week prior to start of section –**
All materials to comprise handouts sent to 1\textsuperscript{st} or 2\textsuperscript{nd} year administrator. This is material to be duplicated (Y2 opt-in only) and distributed to both classes electronically. Typically, it should include lecture slide sets, which will be printed as 6 slides/page handouts. For longer sections (>3 weeks) it is acceptable to divide the handout material into more than one portion and only make the first portion available at this time. Material for each subsection should still be made available one week prior to starting that subsection. With Coordinator assistance if needed, post welcome announcement to class.

**Two weeks prior to scheduled exam -**
Complete, finalized exam sent as Word document to Violet Kulo. Indicate correct answer of multiple choice questions and include high-quality images when appropriate. Include new exam questions that will not be included in the grade the first year and indicate which ones they are.
Tips for Blackboard (BB) and Oasis

These are not all-inclusive, just a few things I learned from trial and error. Users’ manuals and technical assistance are available within each program or through Harry Goldberg’s office.

BB

BB is the course management software used throughout JHU. Once you are assigned user privileges as a course section leader, you can upload files of any type, add headers and explanatory messages, edit the appearance of pages, post announcements, and send emails to individuals or groups of students. The students use BB as a hub for course materials, as well as to complete exams and course evaluations.

The bulk of materials for your section will be up-loaded by the course administrator. You will need to get her the materials and instructions for where in the folder structure you want them posted. Uploading material is straightforward, but tedious when a large number of files need to be loaded. **Allow sufficient time for you or the administrator.**

The file structure for all GTS sections must remain consistent. The course materials folder includes the following sub-folders:

- Syllabus
- Goals and Objectives
- Slide Presentations
- Lecture Notes
- Small Group Materials
- Workshop Materials (for Genes to Society Course Workshops)
- Readings and References
- Quizzes

**Do not add, delete, or rename the folders.** Use your judgment as to where to post the materials specific to your section. Some longer sections create subfolders for each week of their section. You can assist the students by adding a list of file contents to the “Course Materials” top page of your section. With Edit mode on (upper right), select the down-arrow next to any of the folder names. This brings up a menu, from which you can select Edit. Then type whatever you want displayed below the folder name into the text box. Click Submit to save the changes. This saves them from having to open a folder to check its contents.

Content is generally uploaded as Files or Items. A file is a single file of any type. An item can be multiple files, each of which can be opened individually. Your choice, but be internally consistent. Use a file-naming convention that will make the file contents obvious to the students: date_time_speaker_title for lectures, for example. Content can be loaded, but kept invisible to the students until a time you specify using the Adaptive Release option. This is useful, for example, to delay the answers to problem sets until after the assigned small group.
Content posted as an announcement will appear on the students’ first page after they log in. Their daily notification will include whether any announcements have been posted. However, students have the option of turning off automated notifications. If you want to be sure they read something, send an email using the communications tools. This can send emails to individuals, groups of students, or students and faculty. There are also listservs for each class (med15@jhmi.edu, for example). However, these are used for all sorts of communications and are frequently ignored. Use the communications tool in BB for course-related email.

Oasis

Oasis is the calendar software for managing the academic calendar and curriculum. It can be accessed from BB via the calendar link, or directly at oasis.med.jhmi.edu. All posting to Oasis is done by Sherrie or Terri, based on the schedule you provide them. If you have session types which are not one of the typical large/small group, be doubly sure to indicate whether attendance is required. Other than that, Oasis is more useful to the students than to the section leaders. It can be used to search for content throughout the four year curriculum. However, the search returns are dependent on the effort taken to tag items or indicate the content of individual events. Oasis is also the curriculum management tool used to produce annual required reports to the AAMC, based on our data entry.

Students check Oasis to know where they are supposed to be when. Please try to avoid last minute changes (notify them by group email). Be sure your instructors know where to be and when.

Objectives

It is an LCME requirement that all educational sessions have objectives. Moreover, it is just common sense that the students should know the key points they need to take away from a dense lecture or other activity. Personally, I find the stilted language of typical learning objectives insulting to the learner (“At the conclusion of this session, the learner will be able to….”). I much prefer an outline slide. However, every lecture must have written objectives. These can be included in the printed handout, in a text document that accompanies the lecture, in a slide that gets printed but not shown during the lecture, etc. You could write a single text document that lists the objectives for each session in your course. It just has to be accessible to the students to guide their studying and to the LCME during a site visit.
Pedagogy

Orientation/Introduction

Written orientation materials should be loaded onto BB by one week before the section starts. This should follow the format in the syllabus template (see Appendix C) and include formal objectives for the section, based closely on the GTS course objectives in this handout. I recommend them as the basis for section objectives because they have been carefully vetted, are consistent with the guidelines of the LCME, and because the section objectives must be congruent with the course objectives. Thus, you will solve a lot of problems if you base your section objectives on the course objectives, even if you think you could write better ones.

Other useful orientation materials include an overview of the section, a faculty list with contact information, and any advice on how to get the most out of the section. A glossary of section-specific terms and abbreviations, a list of specific concepts that they will need to master, a description of any unique teaching methods are some other ideas that might be useful to include up front.

Please open your section with a brief orientation lecture that covers the same material on day 1. It is also essential to have an early lecture provide a review and overview. The review should include embryology, anatomy, radiology to provide a clinical context, and organ-appropriate parts of the history and physical (which they will have heard in Clinical Foundations). It should also provide an overview or outline of what the section will cover. Sections that have opened with a detailed, narrowly-focused lecture without first painting the big picture have consistently gotten off on the wrong foot.

Lectures

Lectures remain the most efficient means of conveying large amounts of information that you want the students to quickly forget. The goal should be to have less than half the class time spent in lectures. Each lecture should last no longer than 60 minutes, and 30 minutes is preferred. Focus on essential principles and core facts. The lecture should distill out what is important for a medical student, not a subspecialist, to know. Clearly distinguish what is core information and what are examples or embellishment. One slide/minute is a good guide for density.

Copious material is available on-line or in print on effective lecturing, and workshops for faculty are provided several times each year by the professional development office. Please coach your faculty to improve their lecture skills and slide graphic design. The students are not shy about providing feedback that can be a useful starting place. Lectures are filmed and are made available on-line. Unfortunately, this means the only incentive to attend is to make the lecture lively and compelling. Students also ask that speakers use the mouse to point, rather than the laser pointer that is invisible on the recorded version.
If possible, try to get some good lecturers to commit to more than a single lecture. This raises the overall quality, and also provides more continuity and internal consistency to the message. Consider the typical college course: One speaker covers an entire textbook, even though their own research involves one paragraph. Our model is the exact opposite. Best practice probably lies somewhere in between. Use ringers for special topics, but aim to have the course taught by teachers.

Students have requested a disclosure slide be included with every lecture. An outline or objectives slide and a closing summary or key points slide are also essential. Students need to know what the take-home points are. I suggest deleting the date from the title slide of all lectures prior to posting. This will make it easier to reuse lectures in subsequent years, without having to edit the dates.

Encourage lecturers to incorporate use of the audience response system (ARS) to enliven lectures, and the SmartBoard or PowerPoint animations to annotate slides. Some sections have begun each day with a brief review of the previous day’s material using the ARS. The students appreciate this. It is essential that lecturers have some familiarity with what the students have already been taught on a topic, including vocabulary. They generally won’t know a term unless you tell them.

Students are aware and highly appreciative when the section and small group leaders are present for all lectures. I understand this is a big time commitment that may not always be feasible. However, it is the best, perhaps the only, way to understand how well material is covered, areas of redundancy or omissions. Students recognize and interpret this as a sign of commitment to running a high quality section.

Electronic lectures

Many sections have produced electronic lectures for some of the material. The advantages of this are that the students can view the lectures at their chosen pace, can easily review slides, lectures can easily include multimedia, feedback questions, and conditional logic. If budget allows, artwork and animations can be elaborate. Once a lecture is produced, it can be reused from year-to-year. Downsides of e-lectures are the loss of opportunity for audience give-and-take or clarification, and the substantial time required to produce a lecture with good production values.

I suggest trying some e-lectures in each section, perhaps adding a few each year, but not attempting to replace all live lectures. Live interactive sessions (lecture hall or small group) should go over material covered in electronic format. This is termed “flipping the classroom.” Relatively static material is better suited to electronic lectures than rapidly changing material, to reap the benefits of a reusable module.

The Office of Academic Computing can help with studio recording of electronic lectures. PowerPoint 2010 includes a feature that allows you to easily record lectures. A tip sheet to assist with planning of electronic lecture is attached as an appendix.
Clinical Correlations

Clinical correlations are teaching experiences that include real patients. They may be held in the lecture hall, simulation center or other small group setting. Sections have used CCs in various formats:

1. A physician interviews a single patient.
2. A panel of patients with different stages of a given disease take questions from the students.
3. Live patients illustrate specific physical findings.
4. Short presentations by a patient, clinician, basic scientist, pathologist, therapist, etc. on their perspective on the patient’s disease, followed by Q &A.

These sessions are limited only by your creativity. However, be sure to leave time for the students to ask questions. In general, the sessions are highly rated and are memorable.

Workshops

Workshops are student-led presentations on a topic that the section leader chooses. Three groups of 2 students each are assigned to present in a total of 90 minutes. All workshops are held Wednesday afternoon, followed by a preparatory meeting for the next week’s groups. One to three faculty members should be assigned to guide preparation (one per group seems to work best). The 3 presentations should fit together in a common theme, as if they were parts of a single talk. The workshops are a good opportunity to cover horizontal strands, and the HS faculty members are happy to help as facilitators. Contact Eric Bass or Gail Geller.

The students can easily go overboard, or be overwhelmed when they do a PubMed search on a huge topic. Faculty facilitators should provide 1-2 good review papers for each group and assistance deciding what is important and relevant to medical students. They should meet in person or electronically several times prior to the presentation, and should review the final slides. Faculty facilitators and other interested faculty should attend the workshops to answer questions. Groups of students are asked to complete a feedback form on the speakers which is returned to them immediately after the workshop. **Facilitators should also compete an evaluation form on the students whom they have mentored, and review it with them immediately after the workshop.**

Facilitator expectations:

1. At the prep session, provide guidance to the students to ensure that the 3 workshop sections are not excessively detailed, and cover related but non-overlapping parts of the main topics.
2. Allow for flexibility if the students are excited about a topic that is not precisely what you had in mind.
3. Provide a few references to assist their research and preparation.
4. Familiarize yourself with related lectures in the section to ensure that the workshops are not duplicating topics that faculty lectures will cover. Your section leader can

Revised July 15, 2014
5. Review a draft of the students’ slides by Monday of the presentation week.
6. Complete a feedback form on the speakers with whom you worked (attached) and review it with the speakers immediately after the presentation. One of the objectives of the exercise is to learn presentation skills and the students have requested this feedback.
7. Provide 1-2 multiple choice questions based on the material to your section leader.

Small groups

If your section small groups will be required to provide narrative feedback to students, inform your group leaders in advance so that they can pay attention to the students’ behaviors.

Small groups consistently work better if they cover **topics from preceding days**, rather than lectures that have just been given. This gives students an opportunity to digest the lectures, recognize what they don’t understand, attempt problem sets, do supplemental reading, or otherwise process the material. Small groups have been utilized in a wide variety of formats, including review of discussion questions, interactive case presentations, computer-based or patient simulations. I encourage experimentation with a variety of methods.

Generally, the success of a small group session has depended more on the qualities of the facilitator than the activity. Meet with facilitators ahead of time to set expectations, make sure everyone agrees on the answers to problem sets. Facilitators should understand that they must come prepared to lead the session, familiar with the materials and objectives for the day. They must know to facilitate, not lecture. If staffing allows, having the same facilitator for multiple meetings with the same group improves the group dynamic and avoids redundancy. Plan to mentor new facilitators, and perhaps have them co-lead a section with an experienced leader the first year.

The simple act of calling students by name (study up from the attendance sheet) goes a long way to improving group dynamics.

Case-based session

In Pulmonary, we use the last small group session to “work up” and “treat” a complex case that is developed piece by piece, much like a patient would play out over time. This exercise requires the students to use clinical reasoning and integrate material from the entire pulmonary section. It also introduces some of the decisions they will have to deal with during clerkships and beyond. I encourage other sections of GTS to add this format as an end-of-section exercise. As the course progresses, the cases can become increasingly complex and draw on earlier GTS sections. The case we wrote, a writer’s manual and facilitator’s manual are provided at the end of this handout (Appendix A).
Team-Based Learning

This is a structured small-group learning experience that can work for rooms full of students, as long as they can work in groups of 5-8. This has worked well in some sections (Hematology) and poorly in others. Essential features that make for an effective TBL session include not overloading the students with reading material beforehand; having the questions in the readiness assessment exam (RAT) fairly reflect what they have read; and having the applications be based on what they have learned rather than requiring significant new knowledge. See the TBL tip sheet (Appendix J) for more details on how to design these sessions.

VM

Virtual microscopy sessions have worked best when they are closely coordinated with the lecture content, and follow, rather than precede a lecture on a topic. They work poorly when they introduce new material devoid of context and when the facilitator has no idea what has been taught in class. The most effective sessions have given the students a specific task when looking at slides (making a diagnosis in an unknown case; finding a specific feature on a slide). A brief review orienting students to what they will see is often well-received. However, in their comments, students are about evenly divided between those who want to set off on their own, with faculty merely there to answer questions, and those who want more of a didactic orientation. You can’t win. Some sections have been successful when they include a clinician to provide context. However, it is important that they allow the pathologist to run the show and not become distracted with clinical material. A best practices tip sheet is attached as Appendix H.

Review Sessions

Review sessions have generally been very helpful. Some sections have started each day with a brief review of yesterday’s lectures. Others have held periodic reviews at transition points. Students appreciate having expired exam questions to help them study, and some guidance as to what trivia is the important trivia. The ARS is excellent to gauge student understanding and identify areas that need attention.

Other

We encourage trials of new teaching methods and hope that successes can be incorporated elsewhere in the course.
Course Evaluations

25% of the students are required to complete evaluations at the end of each section, and sometimes in the middle of longer sections. There are no longer any extra credit points given on the final grade for completing the evaluation. Students will not receive a grade for the section until they complete their evaluation. Additional students are also welcome to submit optional evaluations. The quarter of the class completing each evaluation will be rotated each section. The five small groups are evenly distributed among these quartiles.

I read these closely to determine where sections need improvement and what methods worked well. You should do the same. Violet Kulo provides the speaker or small group leader evaluations separated by speaker, together with mean values for all speakers. I recommend you send each speaker and small group leader their evaluations and comments. Please mentor poorly performing teachers, or find substitutes for those who are refractory to change.
Attendance Policy

Please do not give instructions to the students that differ from the official attendance policy:

Among the goals of the Scientific Foundations of Medicine and the Genes to Society courses are to develop a sense of professionalism, to promote collegiality, to engage students in teaching one another, and to give students experience working in teams where different backgrounds and expertise are represented. Meeting these goals requires each student to be actively engaged, therefore attendance is mandatory at all group learning and teamwork activities. Attendance is also mandatory at all activities that involve patients and/or guests.

Mandatory attendance:
- Small group sessions
- Clinical Correlations
- Events involving interaction with a patient
- Case discussions
- Labs
- Activities in the Simulation Center
- GTS Workshops

Failure to attend at least 80% of these events in a block will result in the student being reported to the course and block directors and the Associate Dean for Student Affairs. Unexcused attendance below 80% will affect the student’s performance in the course and will be considered a breach of the standards of professionalism expected by the School.

Excused absences may be granted in cases of illness, religious observance, family emergency, presentations at scientific conferences, or required legal activity (e.g., jury duty) through discussion (in advance whenever feasible) with the section director, course director, and/or Associate Dean for Student Affairs.

With assistance from Terri and Sherrie, I will track student attendance. Remediation will be required of students who miss too many sessions, and they receive a U for the section. I may be contacting you to discuss appropriate remediation expectations. Please remind small group instructors to circulate the sign-in sheet and leave it in their room. Because of problems in the past, they should bring it to your attention (and you to mine) if they believe a student is signed in but is not physically present in small group. I will deal with them.
Examinations

Each section of GTS will have a summative examination. These will be multiple choice, single correct answer, and will be administered electronically through QuestionMark (QM). The goal should be 75-100 questions per exam. Examination questions can be reused, but adjust the question based on the previous year’s item analysis or any change in the teaching materials. Questions from prior years already exist in QM and do not have to be re-written. In addition to the reused questions, write 20-25 NEW exam questions each year. This will give us a pool of questions that will allow us to give remediation exams that are different from the first one.

Writing good questions is difficult. Please see question-writing tips (Appendix C). I will review the exams before posting to make sure the questions are unambiguous and not too susceptible to strategy. The section leader should write as many questions as feasible for his or her block, and should edit all questions carefully to assure that they address key material, align with lecture objectives, and are well written. Keep in mind that these are medical student level questions, not questions for fellows taking subspecialty boards.

Avoid answer choices such as “all of the above”, “none of the above,” “both A and B,” “A, C, but not B,” etc. Just write straightforward one correct answer questions. A cluster of questions based on a patient scenario is good, but avoid clusters in which the answer to subsequent questions is contingent upon them knowing the answer to the first one. Include questions that require reasoning rather than simple recall. Include multimedia and images if appropriate.

Complete exams should be sent to Violet Kulo as a single Word file in which the correct answer is indicated. They need to be received at least 2 weeks in advance of the test date to allow time for review, revisions, posting and beta-testing prior to administration.

Grading

The end-of-section exam should reflect the minimum level of medical knowledge that a student should possess. Passing the end-of-section exam is therefore required to pass a section. After each exam, you will receive a report of how each question performed. Review poorly performing questions to determine if they should be dropped from the calculation of the exam score. Sometimes the wrong correct answer was keyed, or 2 answers could be considered right. Sometimes the question is just bad or asks about material that was not taught well. These issues should be caught before the test is administered, but some still slip through.

I encourage you to incorporate other forms of evaluation into your section: Quizzes, TBL IRAT exams, etc. These may be used to provide formative feedback to students and to make sure they are grasping the concepts, or they may be included in the final grade. If you use non-objective elements in the final grade (reflective essays, for example), the total contribution of these subjective elements of the final grade should not exceed 10% to preserve the importance of the final exam. Do not grade small group performance or participation. These grades are almost uniformly perfect and end up being free extra credit. Small group leaders will complete the narrative feedback but this will not be included in the grade calculation.
Remediation Policy

Standardized remediation plan for knowledge-based examinations in the Genes to Society Year 1 and Year 2 curriculum

Goals
- Provide a uniform approach and set of expectations for students who fail an exam in a section of the GTS course in years 1 or 2.
- Promote only those students who have demonstrated their competence.
- Assist students in obtaining that competence through the remediation process.

1. Passing score for first test administrations will be the lower of either 70% or 1.5 SD below the mean score.
2. Students who fail the first test administration or other requirements of the section will receive a U for the section until they successfully remediate. The U and remediation outcome will be reported to the registrar.
3. First remediation attempt will be no sooner than one week after the failed exam.
4. The latest that remediation can be completed is August 1 for first year students and July 1 for second year students.
5. Whenever possible, remediation testing should be postponed until after a vacation (spring break, etc.) to prevent students from falling behind in on-going work.
6. Students failing any end-of-section exam will speak with the section leader or course director to discuss potential reasons for the failure and establish a learning plan. The student’s college advisor will be informed of the need to remediate by the course director.
7. First remediation requirement will be to retake a proctored exam
   a. Closed book format will require 70% to pass
   b. If banked exam questions are available, new questions should be substituted in the redo exam.
8. If the first remediation is failed, the student will meet with the course director. Learning plan may include scheduled peer tutoring sessions.
9. Second remediation requirement will be to either:
   a. Write one or more essays of up to 2 pages in length, on topic(s) assigned by the section leader. Topics should be based on the test questions that were missed and the associated lecture objectives, with the total page requirement < 5. Essays will be graded P/F by the section leader, approved by the course director.
   b. Complete an oral examination administered by the section leader, to be based on the missed test questions and associated lecture objectives.
10. Students whose attendance record does not show >80% attendance at the total required sessions for a course block will meet with the course director. If they cannot justify or disprove their absences, they will receive a grade of U until they remediate, and a Professionalism Concern Card will be forwarded to the Dean of Student Affairs.
    a. Remediation plan will be an essay based on the content of the missed session(s), not to exceed 6 pages, and
b. A reflective essay on why attendance is considered required for certain curricular events, not to exceed 1 page.

Students who miss a quiz or other required element of the final grade that counts ≤10% toward the grade WILL NOT be allowed to make up the quiz. They MAY make up the quiz if and only if they have missed it due to one of the excused absence reasons (illness, family emergency, presenting at a national meeting, etc.) If you are nice, you may want to avoid scheduling quizzes on the Friday before vacations, Turtle Derby day, or similar historic events.
Teaching resources

IEE Website of teaching skills training and resources:


JH SOM Faculty development in teaching resources:

http://www.hopkinsmedicine.org/fac_development/teaching/index.html#teaching_Skillstop

Links to teaching courses offered here and on-line videos and tutorials.

Harvard Derek Bok Center for Teaching and Learning:

http://bokcenter.harvard.edu/icb/icb.do

This is a rich source of tutorials, articles, and videos on teaching skills.

The NBME test writing guide:


This is the gold-standard guide to writing the gold-standard exam.
Appendix A

Lung Pathophysiology
Small Group Case Discussion
Facilitator Manual

This material will be used during the last small group session of the Lung section. The information that follows describes a case through which you will lead the group to its conclusion. Pieces of the case are to be revealed bit-by-bit, guided by the class’ response. They may stray into the weeds for a while; you should let them try to find their way out but not let them fall in any big gopher holes. They should be forced to be active participants; depending on the group that may require long periods of silence. Getting the “right” answer is important, but so too is the process.

Educational Goals:

- Encourage active student participation.
- Integrate facts and concepts learned across multiple lectures.
- Introduce clinical thinking and decision-making.
- Introduce concepts of medical uncertainty.
- Integrate multiple layers of medical knowledge (basic science, physiology, genetics, therapeutics, etc)

Logistics:

Divide the class into 3-4 groups. Let all the groups work out their response to each section, then have a representative from one group present their conclusions to the class. Give the class some time to agree or disagree and discuss the plan. I found that it takes about 10 minutes of discussion in small group, then another 5-10 minutes for the whole class to discuss a complex step. Listen to the murmuring to help time your interruptions without rushing them. Then move on to the next bolus of clinical information. When appropriate, call on one group or another to represent the radiologists, the ID consultants, the MICU team, etc. Ask open questions (What are you thinking? Why?) rather than closed (What would the spirogram look like?) whenever possible. Even if you disagree with a plan, consider letting it play itself out for a while rather than acting as the hand of God. ("Okay, now the patient has no palpable blood pressure. What next, Einstein?"). If some of the students have laptops, encourage them to use Google to find answers.

I used the differential diagnosis to provide structure to the discussion. That is, I had the group come up with a differential without telegraphing my approval or disapproval. I asked them to justify their additions or deletions from the list, or asked the class what they thought about each suggestion. As the case revealed itself, we added or subtracted. The case suggested the underlying diagnosis early on, but without cues from me they did not focus on it.

Encourage group participation by not answering the questions they will pepper you with until the whole class is ready to discuss it. (Some specific points may need simple clarification.) Redirect other questions to their group; they may get out their laptops to Google things. When asking for input, wait a good 6-8 seconds before calling on someone to answer. Try to get the quieter students involved, perhaps with follow-up questions or to offer their opinion on someone else’s suggestion.

Use the blackboard to track the discussion. I write down a differential diagnosis that we re-order, add and subtract to. Other lists may be questions they want to ask or tests they want to order.

At this point, they have had very limited patient exposure including history and physical skills. I really don’t know how much H&P vocabulary they will know. Don’t get too side-tracked, and don’t get them too worried about stuff they don’t know yet, unless it was just taught in Pulmonary Pathophysiology.
I have provided below the outline of the case, but feel free meander around it and embellish features as time and interest allows.

The case is a patient with previously undiagnosed mild CF having an acute exacerbation. I hope you can lead them through the process of recognizing that this is an obstructive disease, considering CF in the differential, knowing what tests to order, deciding whether to admit the patient, actually choosing some admission orders, deciding whether to intubate the patient, etc. The exercise will require that they remember facts from multiple different lectures, combine them with the inevitable medical uncertainty, work as a team, and deal with the results of their decisions.

This is an experiment, so I will need your feedback on whether it works, how to make it better, or whether we should revert to the same set of questions and answers we have used since about 1974.

Information to be revealed to the students is in italics, followed by suggested teaching points:

*The young woman before you could have been a classmate, except you've never seen a classmate looking so sick. Her frightened husband holds her grey hand. Rail-thin beneath her sweat-soaked hospital gown, she sits bolt upright on the ER stretcher barely aware of the new intern next to her. “I. Can’t. Breathe.” Her husband implores, “Doc, I’ve never seen her this bad before. Please, you've got to do something!” Your white coat, cool and crisp when you slipped into it a few hours ago, starts to dampen.*

What is running through your mind?
What do you want to do immediately?
What would you like to ask her and her husband?

Points to bring out:

Give oxygen. Characteristics of the dyspnea, duration, severity, positional qualities, episodic or continuous nature, associated pain, cough, sputum, relevant past, social, or family history. Rather than just soliciting a list, ask the class to “think out loud” about what is on their differential and how the answers would expand, contract, or re-order the possibilities.

The next set of data can be revealed piece-by-piece, when they ask the right questions, or all together when they have exhausted their ideas. If there are important omissions, you might suggest “Would smoking history be important? Why? etc.

*You give her some oxygen by nasal cannula and she looks a little more comfortable. You are able to piece together her story with help from her husband. She developed a “cold” about 4-5 days ago, but it “settled in their chest.” She has been getting more short of breath for 2-3 days, with an increasing cough productive of green sputum. She has not slept in about two days. She felt feverish, but did not take her temperature. She has not had chest pain or rigors. Her child had a cold last week but is recovered.*

*She is not normally short of breath, but does not exercise and works at a desk job. She does feel winded if she climbs a flight of stairs quickly. She typically has a morning cough productive of tan sputum. She has episodes once or twice a year where it turns green, she feels more short of breath or wheezes. If it bothers her enough, she goes to an urgent care center for an antibiotic prescription, which is what she wants now. She also has an inhaler of some medication she does not remember that she uses when she has these episodes. It does not seem to be helping now.*

*She does not know of any other medical illnesses. She has never had pneumonia that she knows of as an adult, but she thinks her mother said she used to get walking pneumonias as a child. She is not on any medications except OCPs nor does she have any regular medical care.*
She and her husband have one child. She smoked for a few years in college, but quit. She works at a computer desk job. Her father, a heavy smoker, has emphysema, but no one else in her family has lung disease.

What is on your differential diagnosis? Why?

Points to bring out:

Could this be a pneumonia?
Does it sound like there is some underlying lung disease?
Could Daddy’s smoking have caused this?
What class of diseases might this be (obstructive, restrictive, etc.)?

What do you want to look for on physical and why?

She is a thin, diaphoretic white female in moderate respiratory distress, leaning forward on the stretcher and able to speak in only short sentences.

Vital signs are BP 135/85, Pulse 125, RR 32, Temperature 38.3, SpO₂ 91% on 2 L/m O₂

Neck: No adenopathy, breathing with accessory muscle use
Heart: Tachycardic with distant tones. No Gallop. There is a I/VI systolic murmur at the base.
Abdomen: Scaphoid, with respiratory alternans.
Extremities: No edema or clubbing.
Neurologic: Alert and oriented. Exam is limited but there is no gross weakness or asymmetry. Patellar reflexes are 3+.

Points to bring out:

What is normal and what is not?
How does this narrow or expand the differential previously discussed?
Can you decide at this point if the patient needs to be admitted to the hospital?
What is pulsus paradoxus and what would it mean in this patient?
What tests do you want to order? Can they be done in a patient this ill (eg, full PFTs)? How will they help you here in the ER?
Is the saturation on 2 L/min normal? Can you calculate an A-a gradient?

Here are some test results:

Hct 37% WBC 14500

(show chest x-ray; have class interpret [subtle retrocardiac LLL infiltrate])

Peak flow 90 L/min

Arterial blood gas pH 7.32/PaCO₂ 50 mmHg/PaO₂ 70 mmHg on 30% oxygen.

Points to bring out:

Interpret the x-ray, blood tests, peak flow.
How does this narrow or expand the differential previously discussed?
Can you now decide if the patient needs to be admitted?
What about a trial of treatment in the ER?
What drugs and mode of administration would you want to try?
Would you start antibiotics? Which ones?

The patient is given a dose of moxifloxacin (you may need to explain what that is), and nebulizer treatments with inhaled ipratropium once and albuterol 3 times (once per hour). She is also given 125 mg of methylprednisolone. After 3 hours, she feels and looks no better.

Now what? Assuming the agree to admit her:
Do you want another ABG?
Consider non-invasive ventilation?
What admission orders do you want to write? (Discuss medications, but also other diagnostic testing, and diet and activity orders....they may not be aware that they actually have to decide each of these things)...and whether this patient needs more attention than provided on a regular medicine floor.

The patient is admitted to the intermediate care unit. Sputum and blood are sent for culture. Antibiotics are changed to ceftriaxone and azithromycin. Corticosteroids are continued, and bronchodilators are continued every 2 hours (for albuterol) and q 4 hours (ipratropium). She is too dyspneic to eat, so IV fluids are started at a maintenance rate. Repeat ABG soon after arrival is 7.30/52/74.

What next? (If they have not yet begun NIV, now is the time)
Are maintenance fluids sufficient? (discuss insensible losses)
Would you consider placing an arterial line?
ICU transfer?

By the next day, 12 hours after admission, she is more dyspneic with marked accessory muscle use. Speech is clipped. Single. Words. She has been awake yet another night. Temperature is 39°, pulse 155, and BP 115/45. Respiratory rate varies between 35-45. An arterial line has been placed, and demonstrates 20 mmHg variations in systolic pressure across the respiratory cycle. Inspection of the chest and abdomen shows paradoxical breathing. Breath sounds are decreased, with softer wheezes but more crackles. To maintain her SpO₂>90%, FiO₂ has been marched up to 80%. The morning CXR shows a larger infiltrate.

What are the implications of the evolving signs and symptoms?
What next? (time to intubate)
Any medication changes?
What sort of decisions need to be made about ventilator settings?

She is intubated and ventilated with 100% oxygen. SpO₂ rises quickly to 99%. BP falls quickly to 60/palp.

What possibilities are you worried about? What do you want to do? (Discuss tube malposition, hyperinflation, auto-PEEP and hemodynamics, pneumothorax)

With adjustments and treatment, BP is restored. The rapidly-acting sedatives administered for intubation are wearing off. The patient appears distressed, with marked accessory muscle use, and seems to be fighting the efforts of the ventilator. BP now rises to 195/140. Oxygen saturation remains 99%

Now what? (discuss hyperinflation, auto-PEEP and respiratory effort)

With sufficient sedation, the patient finally appears comfortable. Oxygen is weaned to 40%, and arterial blood gases are 7.36/45/65. The blood cultures show no growth, but the sputum gram stain and culture shows many PMNs, few epithelial cells, and a heavy growth of Pseudomonas.

What organisms usually cause community-acquired pneumonia?
What diseases or situations might Pseudomonas suggest?
Would you change antibiotics? (they probably won’t know this yet, so don’t make them feel scared)
What additional questions would you want to know?
What tests might you now be interested in ordering?

Antibiotics are changed to an anti-pseudomonal penicillin and aminoglycoside. Over the next two weeks, the patient improves, is successfully weaned off of mechanical ventilation, and is getting ready for discharge home.

The patient’s mother reports that her daughter had an intussusception reduced as an infant. Sweat chloride testing shows a chloride level of 45 meq/l
Genetic screen for CF mutations shows the patient is compound heterozygous D508/A544E.

What other medical and non-medical therapies might be appropriate for her?
What would you tell her about genetic screening for her child and siblings?
What could you tell her about her own prognosis?
What do you think her PFTs would look like when she recovers?
To whom should she go for follow-up care?
Appendix B

GTS Small Group Case-Based Exercise
Writer’s Manual

Introduction

The case-based exercise is intended as a 1-2 hour small group exercise devoted to a single case. It will generally be used as the last small group meeting of each organ system; for some systems more than one session may be appropriate. The case will be revealed to the group piece by piece, much in the way a real patient would unfold.

The group should be divided into subgroups of 4-6 students. After each bolus of new information is introduced, the subgroups will be given a series of open-ended questions and will have some time to work among themselves. One subgroup will then be asked to present their ideas and there can some discussion. The next set of patient information will then be revealed, etc, until the case is worked to a conclusion.

Goals

The goals of case presentation and discussion in this format are to:

- Integrate facts and concepts from within the current organ system, from organ systems that preceded the current one, and from the levels of genes to society.
- Introduce clinical thinking, decision-making, and medical uncertainty to foster the transition from the fact-based learning of the pre-clinical years to the clinical reasoning that will dominate future years.
- Reinforce facts and concepts by encouraging active participation in a realistic situation.
- Reinforce the teamwork inherent in medical care.

Writing the case

The author should prepare both a case manual and an instructors’ manual. The case will include all of the information that is to be revealed to the students, the sequence of revelation, and will be divided into appropriate sections. Each section will conclude with one or more discussion questions. At least one question in each section should be open-ended (What diagnoses are you considering? What else would you like to know?) while others may be more specific (What cell type would dominate the inflammation? What would you expect the spirogram to look like?)

Instructors’ manual

The instructors’ manual should include explicit instructions that would allow a small group leader who knows the field to walk into the classroom and run an effective group. This would include an explanation of the purpose of the exercise, instructions on how to divide up the group into subgroups, how to present the case and phrase questions, suggested time to be devoted to each section, and key discussion points for each section of the case. Where there are a range of possible answers, the most important or essential ones should be listed. For example, if every patient with a certain presentation needs a CBC, but some doctors might also want other tests, the instructors should be sure a CBC is mentioned before moving on to the next step. If one step of a case could open up discussions of multiple issues, the manual should indicate which ones need to be covered. For example, a case of a genetic disease could lead anywhere from genomics to eugenics. Some flexibility can be encouraged, but the instructor should know what the class is expected to learn. Where there is controversy or when some instructors may be more or less knowledgeable about a condition, the student’s course handout, lecture notes, or text should be referenced as the final authority. If there is information that the students have not yet had in class but is crucial to the case, the instructors’ manual should indicate that so their expectations are appropriate.
We also recommend that the manual include a reprint of a paper such as Gabarro JJ and Harlan A, A note on process observation, In: Leading the discussion process: Some basic operating issues 1976: 205-210. This is a practical guide to running a small group session that provides tips on how to encourage participation and make the session lively and memorable.

Case

A good case for this format includes:

1. **Realism.** The best cases are real cases, although most will require modification to fit the time and teaching points. An imaginary “typical” case can work, but a case that is obviously contrived will be dismissed.

2. **Personality.** Patients and doctors that have character and back stories are more engaging. The patient does not need to be Madam Bovary, but they should not just be generic WM or BF. One way to give the physician a personality is to make him/her be the student themselves. Another way is to have the characters speak in their own voice, with quotes.

3. A **hook.** Cases are stories. Good stories open strong: “It was the best of times, it was the worst of times.” “Call me Ishmael.” Not: “You are asked to see an elderly woman with no appetite.”

4. **Relevance.** The case should address the key objectives of your GTS session. It should not, for example, focus on diagnosis of a rare disease unless the process of making that diagnosis incorporates important key objectives.

5. **Completeness.** Provides enough information to get to the next step. Students should need to call upon what they have learned, apply concepts and facts, but should not have to guess at what they have not yet encountered in the GTS course. Students will have other exercises in GTS where they need to do outside research and report back to the group. This case exercise is not intended to be run in that fashion.

6. **Red herrings.** A juicy case provides some excess information. Some detail will improve the story, and some will just be distraction. However, every real patient provides too much information about some things, and too little about other things. Part of medical decision making is knowing what to discard and what to explore.

7. **Variety.** Include data in multiple formats. Taking time to show an x-ray or blood smear in class, as on the wards, is more engaging and educational than reading the results.

8. **Integration.** Cases should include facts and concepts not only from the current organ section, but also from preceding sections. Therefore, cases can get more complex as the year progresses, with more co-morbidities, social dysfunction, polypharmacy, etc. This may require some consultation from other section leaders to clarify the class knowledge level. With planning, characters can recur, such as a patient who develops complications from the therapy prescribed by an earlier set of specialists.

Cases may be set in a clinic or office, emergency room, hospital ward, the side of the highway, etc. They may end well or poorly. Both physician and patient/family characters can exhibit adaptive or maladaptive traits. If appropriate, the linear story can be interrupted by health system roadblocks, such as unavailability of a hospital bed, medical non-adherence, lack of insurance, or loss to follow-up. However, we do ask that there be some consistency to the cases among all the organ systems:

- Cases should be presented in the traditional order of history – physical – lab (although some patients sent for a consultation might bring an outside test with them).
• Physical exam data should begin with general appearance, include vital signs, and should mention at least the major elements of a standard physical. The physical would be an opportunity to include distracters in addition to the relevant positive and negative findings.

• Laboratory testing should be pragmatic, and distinguish what is needed to narrow a differential from what else might be abnormal in this disorder. The student should learn what should be ordered, not what could be ordered.

• Differential diagnosis should be discussed at several points, such as after the history, again after the physical, and after each layer of laboratory data. The questions should guide the students to make a complete list, choose the most likely diagnoses, and decide what information they need to distinguish between possibilities. Once they get that information, they should be prompted to revisit the list to see what gets added or eliminated.

Before unleashing the case on the class, I strongly suggest reviewing it with colleagues and pilot testing it with a few medical students to make sure there are no dead-ends.
Appendix C

Item Writing Tip Sheet
Based on the NBME’s Item Writing Manual*

Anatomy of a multiple choice item

A 15-year old boy has had two episodes of severe anaphylactic shock following bee stings. Which of the following is the most appropriate intervention?

- A. Administration of corticosteroids during the summer
- B. Long-term prophylactic antihistamine therapy
- C. Protective clothing
- D. Restrict him to the house during the summer
- E. Desensitization with bee venom extract

Stem
Incorrect Responses
(Distracters)
Correct Response (Key)

In General
- Each item should be aligned with a course or lecture objective
  - Exam performance will reflect how well students meet objectives
  - Will reduce students complaining about testing trivia
- Each item should only have one correct or best answer on which experts would agree
- Each item should assess one idea; otherwise consider breaking into two or more items
- Include items that require reasoning and analysis, not just recall
- Avoid groups of questions in which knowing the first is required to answer the others

Solutions
- Students should be able to answer the question before reading the options (i.e. the options should not set the frame of reference)
  - Use clear and unambiguous wording
  - Avoid the following: is associated with, is useful, is important, may, could be, etc.
  - Avoid negative wording (not, except), if unavoidable, CAPITALIZE the negative word(s)
  - Avoid items that contain a frequency term (usually, often, frequently are interpreted variably)
  - Longer stems with shorter options are preferred over shorter stems with long options
  - If using a completion item, do not leave the blank at the beginning or in the middle of the stem
  - Make sure the stem of one item does not cue the correct answer to another item

Distracters
- Distracters should not cue students to the correct response
  - Must be plausible (if no one is choosing the distracter than it probably needs to be replaced)
  - Should be similar to the correct answer in terms of:
    - Construction
    - Length
    - Grammar
  - For numerical data, the options need to be consistent and ranges non-overlapping.
  - Avoid 2 mutually exclusive responses; correct answer MUST be one of them
  - Avoid never and always; response is always wrong and students never choose it
  - Avoid excessive use of none of the above or all of the above. Students need only remember some of the information to answer all of the above (e.g. only need to know at least 2 options are correct) or to exclude none of the above (e.g. just need to know 1 option is true)

Appendix D

Tips for a great GTS lecture

Planning

- Think carefully about what a MEDICAL STUDENT needs to know
  - Hint: It’s not your research
  - Key principles and essential facts
- Keep GTS in mind
  - How the general applies to the individual
  - Basic, foundational science
  - Clinical applications
  - Societal implications
  - Physiology, Pathology, Pathophysiology, Pharmacology, Horizontal Strands....
- Know your objectives; what do you want them to learn?
- Be aware of what they have been taught before or have not yet learned
  - Search.med.jhmi.edu to search entire GTS curriculum for terms
- Develop concepts in logical sequence
- Rearrange and cut ruthlessly

Slides

- Include objectives at beginning (for handout; need not project slide)
- Use text minimally
  - Large (>20 pt) sans serif font, plain background
- Use figures generously
  - Simplify or draw figures for clarity
  - Do not use published tables of data or published complex figures; unreadable
- Animate slides to improve clarity
  - Not to “jazz up” presentation
- Include key points at end

Delivery

- Rehearse, with a colleague if necessary.
- Speak relatively slowly
  - Plan 1 slide per minute of lecture
- Project enthusiasm
- Use mouse rather than laser pointer
- Engage audience
  - Use audience response system to gauge understanding
  - Break up long (>30 minutes) with some change of pace:
  - Move from lectern
  - Ask questions
- Define new terms, don’t assume they know vocabulary
- Remind them when you are reviewing past material
- Emphasize and repeat important points
- Summarize periodically and at end
• Don’t exceed allotted time
• Handouts must closely match slides

For more information:

Speaking Skills

The Derek Bok Center Web Site:
http://bokcenter.harvard.edu/icb/icb.do?keyword=k1985&pageid=icb.page29696

University of Kentucky web site on scientific presentation:
www.kumc.edu/SAH/OTEd/jradel/effective.html

PDF on scientific presentation from the Oceanographic Society:
http://www.tos.org/pdfs/sci_speaking.pdf

Training paper from the US Agency for International Development
http://www.reproline.jhu.edu/english/6read/6training/lecture/sp605web.pdf


Gedula MH. Effective lecture presentation skills. Surg Neurol 47:201-4, 1997

Gedula MH. Working with slides and transparencies for presentations. Surg Neurol 47:308-12, 1997

Graphic design

Preparing Scientific Illustrations, 2nd Ed. Mary Helen Briscoe Springer-Verlag, New York, 1996

Appendix E

Standardized syllabus template

Johns Hopkins University
School of Medicine

Course Title

Course/Session Director: Name
Phone Number (and time[s] you can be reached)
e-mail address

Course Coordinator: (If you have not identified a coordinator within your department, please use: for Year 1 events, Sherrie Fornoff (sfornoff@jhmi.edu) and for Year 2 events, Terri Hennel (thennel1@jhmi.edu).

Small Group Facilitators: Names and email addresses

Class Schedule: Inclusive Dates; link to OASIS

Examination Schedule: Dates and times

Course Description: <Brief description of the course, what students will learn and how this fits in the overall curriculum. This course is about..... It builds on what you learned in.....What you learn here will prepare you for..... The course uses a combination of lecture, readings, small group problem solving, etc.>

Course Learning Objectives:
<Enter 6 to 12 major objectives of the course. These should include the required program learning outcomes for the course. Instructors may include other outcomes they feel are important. This is also an opportunity to note if any horizontal strands will be addressed in this course. Where possible, link to the institutional objectives and competencies.>

What’s New
<Note any changes in the course from previous cohort as a result of student feedback or other evaluation. Delete section if no changes.>

Required Text and Other Materials
<Enter required and/or recommended text(s) and other materials. If no text is required, please indicate this on the syllabus.>

Assignments
Enter assignments for course and due dates for each.

Evaluation and Grading
A. Formative: How will students know how they are doing in the course?
B. Summative: Indicate the basis for computing course grades and the relative weight of each assignment, exam, etc. **Students should have a clear understanding of grading requirements and criteria for letter grades.**

For Example:
Class Discussion (25%) **
Theory Paper (20%) 
Mid-term Exam (15%) 
Research Project (20%) 
Final Exam (20%)

**Grading Scale** (grading scale is determined by the School of Medicine.)
P = Student has an average equal to or exceeding 70% and has met all required assignments for the class.
U = Student completion of some examinations or assignments is below passing level. These examinations or assignments must be remediated in order to convert to P.
I = Student has a passing average for the course, but has missed required events, because of illness or emergency. Student should meet with course director to plan remediation.
F = Student has failed significant required elements of the course, or has an average score below the passing level for the course. Student should meet with the course director to plan remediation.

**Expectations**

Example: Participation in lectures, discussions, and other activities is an essential part of the instructional process. Students are expected to participate regularly; those who are compelled to miss class meetings should inform their instructors of the reasons for absences. Faculty often include classroom participation and attendance in student grading and evaluation. The instructor will clearly communicate expectations and grading policy in the course syllabus.

The JHUSOM policy on attendance in the curriculum is posted on Blackboard. Note the following JHUSOM policy:
“Students whose attendance record does not show >80% attendance at the total required sessions for a course block will meet with the course director. If they cannot justify or disprove their absences, they will receive a grade of U until they remediate, and a Professionalism Concern Card will be forwarded to the Dean of Student Affairs.”

**Weather and Other Emergencies**

The School of Medicine follows Johns Hopkins University policy regarding closure due to weather emergencies. Weather emergencies are available at the phone numbers and website below, as well as on radio and TV broadcasts ([http://www.insidehopkinsmedicine.org/weather.pdf](http://www.insidehopkinsmedicine.org/weather.pdf)):

Baltimore 410-516-7781
Outside Baltimore 800-548-9004
URL: [http://webapps.jhu.edu/emergencynotices](http://webapps.jhu.edu/emergencynotices)

**Examinations**

A student who must miss an examination should notify the instructor and arrange a makeup examination.
Refer to the SOM Remediation Policy (link) for a full explanation of remediation process for failed examinations.

**Classroom Accommodations for Students with Disabilities**
If you are a student with a documented disability who requires an academic adjustment, auxiliary aid or other similar accommodations, please contact the Office of Student Affairs at 410-955-3416.

**Statement of Diversity and Inclusion**
Johns Hopkins University is a community committed to sharing values of diversity and inclusion in order to achieve and sustain excellence. We believe excellence is best promoted by being a diverse group of students, faculty, and staff who are committed to creating a climate of mutual respect that is supportive of one another’s success.

**Teacher Learner Conduct Policy**
The Johns Hopkins University School of Medicine is committed to fostering an environment that promotes academic and professional success in learners and teachers at all levels. The achievement of such success is dependent on an environment free of behaviors which can undermine the important missions of our institution. An atmosphere of mutual respect, collegiality, fairness, and trust is essential. Students should review the JHUSOM Guidelines for Conduct in Teacher/Learner Relationships, located on Blackboard.

**Student Honor Code**
Students are reminded of the honor code developed by the medical student body, introduced in September 1991, is as follows:
As a student at The Johns Hopkins School of Medicine, I pledge:

- To do my own work and be honest in my interactions with peers, faculty, and staff. This applies to my work on examinations, assignments, and papers as well as work in the laboratory.
- To uphold the high standard of conduct in patient care which has always been maintained by the Johns Hopkins medical community.
- To base my interactions with other students on mutual respect and cooperation.
- To act on infractions of the honor code and to maintain the confidentiality of all parties involved.
- To encourage my peers to uphold this honor code.

It is the expectation that Hopkins students live by this code.

**Course Evaluation**
The following statement **must be included on all syllabi exactly as written below**:

Course evaluations are an important tool for improving the School of Medicine’s quality of instruction. Your responses on the evaluation are anonymous. The evaluation software records only whether or not you complete the evaluation and course directors will only receive aggregate results for each item. To reduce the burden of surveys, one quarter of the class will be required to complete the evaluation at the end of each section, on a rotating basis. If you are assigned an evaluation, you will not receive a grade for the section until you complete it. However, all students are welcome to submit evaluations for any section if they have comments or suggestions.

**Bibliography**
If applicable, include list of resources (other texts, learning aids, online programs, etc)

**Course Outline**
Divide your course into units/sessions/topics: Indicate dates, topics, and assignments for each unit.
Appendix F

Pharmacology Study Guide

GTS section: ____________

**Instructions:** Complete this table during the GTS section. All information for which you are responsible should be available in lectures and handouts. Cells containing an X are items that you are not expected to know at this time. In addition, drug brand names are provided so that you will start to become familiar with them, but only generic names will be used on the exams in GTS.

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<th>Drug class</th>
<th>Drug</th>
<th>Indications</th>
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<th>Elimination</th>
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Drug class
Appendix G

Advice for Creating and Utilizing an E-Lecture as Part of a Flipped Classroom Approach

Introduction and Overview

Electronic lectures (e-lectures) are a valuable component of Genes to Society. They emphasize core material, reduce the number of standard lectures in a course, and promote increased interaction between learners and faculty. E-lectures are under-utilized in the GTS course. In order to be effective, e-lectures must be accompanied by a post-e-lecture activity (i.e. small group didactics, flipped-classroom learning, virtual microscopy sessions, etc.). They should not be viewed as a way to decrease faculty requirements for a course since when done properly, faculty are an essential component of the post-lecture activity.

This document outlines a straight-forward plan to select, prepare, record and edit material into a top-notch e-lecture that will be a solid platform for knowledge transfer in a long lasting format. Suggestions for post-e-lecture activities are also provided.

General Guidelines for Creation of E-Lectures

1. Topic Selection for Lecture
   - Choose topic whose general information is unlikely to change in the near future (i.e. core principles)
   - Target existing lectures that are already high quality – based on student feedback, evaluations, content test scores, etc.
   - Target existing lectures that already have associated small group or post-lecture activities
   - Choose a topic that you are excited about
   - Target lectures/topics that are conceptual and not dense recitations of facts
   - Ask your course director for assistance in the selection of topics/lectures

2. Designing the Post-Lecture Activity – “Flipping the Classroom”
   - Small group discussions
   - VM sessions
   - Assignment to do in advance of small group session
   - Multiple choice questions to be completed in class (i.e. audience response questions)
   - Online discussion forum (students can ask questions or post assignments related to the lecture; students can also comment on each other’s questions/assignments)
   - Full class discussions
   - Simulation activities
   - Computer-based simulations
   - Clinico-pathologic Correlations (CPCs)

3. Tips for lecture creation
   - Define clear objectives for the lecture and post-lecture activity
   - Choose the style of e-lectures: video of actual lecturer with splicing of slides, voiceover of slides, etc.
   - Include images, figures, videos, tables; avoid all-word slides when possible
   - Don’t use overly complicated figures
   - Be succinct! Focus on the main points. Avoid minutiae and personal research interests unless they apply directly to the material being covered.
• Avoid acronyms and alphabet soups of genes/proteins that are beyond the scope of the material
• Know your audience – approach the lecture with the right level of difficulty
• **Target 20 minutes or less for your e-lecture.** If your material won’t fit into 20 minutes, cut non-essential material or divide the topic into multiple e-lectures
• Add pauses or breaks to ask questions, encourage students to think about the material, or transition to a new topic
• When talking over your slides, annotate the slides to focus the viewer’s attention

4. **Resources**

• Platforms with links to helpful sites:
  i. Powerpoint - [https://support.office.com/en-au/article/Add-narration-to-a-presentation-0b9502c6-5f6c-40ae-b1e7-e47d8741161c](https://support.office.com/en-au/article/Add-narration-to-a-presentation-0b9502c6-5f6c-40ae-b1e7-e47d8741161c)
  iii. Voicethread - [https://jhu.voicethread.com](https://jhu.voicethread.com)

• Useful resources at JHU: OSU, interested students, IEE: [https://improveteaching.med.jhmi.edu](https://improveteaching.med.jhmi.edu)
• Other online guidelines: [http://www.faculty.londondeanery.ac.uk/e-learning/e-learning-in-clinical-teaching-1](http://www.faculty.londondeanery.ac.uk/e-learning/e-learning-in-clinical-teaching-1)
Appendix H

Designing and Delivering a Virtual Microscopy (VM) Session

Introduction and Overview

VM sessions are a critical component of the GTS curriculum and one of the few pathology focused experiences for students in their medical school education. A systematic review of student evaluations of VM sessions has shown that they are not as well received as other small group sessions. There is also considerable variability in the structure and delivery of VM sessions both within and between courses. In an effort to improve the overall VM experience, the GTS Pedagogy Working Group has created suggested guidelines for the design and delivery of VM sessions.

General Tips for an Effective VM Session

- Introduce yourself at the first VM session so the students have a basic understanding of your interests and experience in both the clinical and research arenas, and your overall career path.
- Make sure that you have the student picture sheet prior to the session. Try to learn at least some student names beforehand. This goes a long way towards building a positive learning environment.
- Familiarize yourself with the technology in the VM rooms, including the Smart Board (see the GTS Course Director’s Manual for further instructions). This projects competence and improves credibility. The converse is also true.
- Familiarize yourself with the overall structure and content of your course. Know what will be unfamiliar to the students (including vocabulary). This will help you to better understand student expectations and abilities and allow you to focus on key topics that are relevant at that point in the course.

Specific Components of an Effective VM Session

1. **Introduction**
   Set the context for the VM session by providing an overview of the session and how it relates to what is currently happening in the course. Speak to the course director or review the syllabus to understand what material students have covered up to that point in the course. This will help you to tie key concepts to underlying themes and tailor your teaching points to the students’ expected level of understanding.

2. **Objectives**
   Provide clear and attainable learning objectives at the beginning of the VM sessions so that students understand the goals for the day.

3. **Daysheets**
   Provide standardized daysheets for students and instructors so that everyone knows what to expect during the session. The daysheets should include a brief introduction as well as the session’s objectives. You might include guiding questions or unknowns for the students to explore during the session.

4. **Outlining the Session**
   After providing the introduction and reviewing the objectives, give a brief orientation to the slides for that session. You may want to prepare powerpoint slides from the available MSCOPE examples (or from your own files) to illustrate key concepts or highlight specific findings. However, this should be an interactive session and NOT another lecture. For example, you could
provide two simultaneous examples, ask students to identify the abnormal image, and then point out the specific abnormalities. Students could also be asked to facilitate this part of the VM session with preceptor guidance.

5. Using MSCOPE
For more advanced learners, you might consider turning off the annotation function or selectively annotating slides on MSCOPE during the session (Note: you have to plan this in advance and contact the OAC for assistance in turning off the annotation feature). Encourage students to really search the slidesets for the abnormality of interest. Remember to turn the annotations back on after class so the students can review MSCOPE later!

6. Reviewing the Unknowns
Allow the students ample time to look at the MSCOPE slides on their own. Circulate around the room during this time to answer questions and to get a sense of where students may need assistance. If you notice specific themes, or are asked a particularly good question, use this as an opportunity to discuss that particular case with the entire class. Try to frame pathologic findings in a context useful to general understanding, not specific diagnoses.

Make sure that you leave some time to discuss the unknowns as a group. It is alright if you do not cover all of the cases. Most cases are well annotated allowing students to review them at home and ask questions the next day.

7. After Class
Some courses have a separate folder on mScope called “Self Test” that has all the slides with the same annotated areas, but with questions rather than explanations. Students can use these for review and then go back to the original cases to check their answers. If your course does not have a “Self Test” folder, consider creating one as a learning adjunct.
Appendix I

Student Accountability Policy

Purpose

1. To provide uniform, transparent expectations for students to complete professional responsibilities and respond to communications in a timely fashion, and to provide a consistent response to the rare events when these expectations are not met.
2. To identify and assist students who have consistent difficulties meeting deadlines or other responsibilities for class assignments, other SOM requirements, or sustaining professional communications.
3. To identify and rectify situations in which expectations such as deadlines and assignments are poorly communicated or excessive.
4. To reduce the burden on the staff and faculty who must track and document compliance with course work or other time-critical professional duties.

Introduction

Medical practice is rife with deadlines. These include prompt clinical documentation, required training modules, and timely communication with patients and colleagues. Medical school is also rife with deadlines. While many of these may seem flexible or optional, there are several implications when students miss deadlines or delay compliance until the last possible moment. Behind each deadline, there is a coordinator, administrative assistant, or faculty member tracking this item for the entire class, awaiting its completion or an email reply. If multiple students are missing several deadlines, the staff burden is quickly amplified, and steps dependent upon the uncompleted assignment are delayed. For the student, these missed deadlines may reflect difficulties with organization that, lacking remedy, will only become magnified during clinical rotations and graduate training. They also may reflect life events that are impacting the student, but which could be misinterpreted as irresponsibility. Similarly, when a given course generates many missed deadlines, this may reflect faults in the way the assignments are communicated, their sheer number, or conflicts with other curricular events unknown to the course director. Therefore, this policy describes the way in which deadlines will be communicated to the students, the expectations for their compliance and timely responses to coursework-related emails, and the process undertaken when students fail to meet expectations.

Communications to students

Deadlines and due dates for student assignments or other course requirements will be posted on Oasis and communicated to students as announcements on Blackboard, together with emails to the course enrollees using Blackboard. These will be posted and emailed at least one week before they are due. The original notification may be followed up by no more than two Blackboard reminder emails by course coordinators.

Communications from students

It is expected that students will check email at least daily during the workweek, and at least weekly during school breaks. For course-related emails that indicate a response is expected, students should respond within 48 hours of receipt, except as noted below. If more time is needed to formulate a complete response, a reply noting the expected date of the complete response should be sent within the 48-hour time window.

Process for students who miss deadlines
1. Within one working day of a missed deadline or assignment, the course director will be notified of students who have not completed the assignment or requirement. The course director is responsible for contacting the student via Blackboard email, with copies to the course coordinator. The student is expected to complete the assignment AND reply to the course director (and all recipients) within one additional working day; if that will not be possible due to circumstances beyond their control, they must promptly email the course director and other recipients to provide an explanation and discuss remedies.

2. If the student has not completed the assignment or provided an explanation within 5 working days of their initial notice from the course director (6 days overdue, exclusive of school breaks), the Assistant or Associate Dean of UME will contact the student to remind them of the deadline. The student must complete the assignment, and respond to the ADUME and course director within one working day.

3. A database will be maintained of students whose missed deadlines have required the intervention of a course director. Any student who has required course director or ADUME intervention three or more times within any two year period or who has not responded to the ADUME in a timely fashion will be referred to their CAP advisor. The advisor will meet with the student to discuss possible reasons and solutions to the problem. The date of the CAP meeting and resolution plan will be reported to the OOC and noted in the student database.

4. The database will be reviewed annually to determine if some courses are generating excessive numbers of missed deadlines. If so, the course requirements will be reviewed and possibly revised.

5. Following a meeting with the CAP advisor, any new missed deadlines will result in the student being referred to the OSA and discussed by the relevant student Promotions Committee. The Associate Dean for Student Affairs or their designee will make recommendations to the Promotions Committee regarding extenuating circumstances or the need for further intervention.
Process flow diagram

Assignment posting, announcement + up to 2 reminders

Completed on time

No further action

>24 hours overdue

Course director contacts student, cc course coordinator

Completed or explanation within 1 day

Extension granted if appropriate

Completed

No further action*

>6 days overdue

Course director contacts OOC, A/ADUME contacts student

Completed or explanation within 1 day

Extension granted if appropriate

Completed

No further action*

>7 days overdue or ≥ 3 missed assignments in past 2 years

Reported to CAP advisor, CAP meets with student, reports to OOC

No recurrence

No further action

Recurrence

Reported to OSA. Need for further intervention discussed at Promotions Committee

* Tracked event

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TEAM-BASED LEARNING (TBL)

The term TBL refers to a specific method of instructional design that includes a combination of individual and group work. It is designed to hold students accountable for coming to class prepared and to contribute to class discussion; it does not simply mean students working together on problems in teams. There are three components to TBL: 1) pre-class preparation; 2) readiness assurance; 3) application exercises.

1) Pre-class preparation usually involves reading, but e-lectures may be used as well.
2) Readiness assurance is assessed using a multiple choice test (typically 10-15 questions) and has two components: an individual and group readiness assurance test (iRAT/gRAT). The same test should be used for both; students should submit their individual exam answers before working on the questions as a team.
3) Application exercises are typically case studies that are sufficiently rich to allow for discussion both within the team and between teams after submission of answers. There should be one or more questions at the end of the case presentation. These should be multiple choice as these are best suited to the principles stated below.

TBL experts talk about “4 S’s” as key features of TBL:

- **Significant problem:** This is obvious; students have to buy into why they are spending class time on a topic.
- **Same problem:** All team work on the same exercises; there is merit to other formats in which different groups work up different cases and then present to the group at large, but that isn’t TBL
- **Specific choice:** Exercises need to be structured so that teams must commit to an answer. There doesn’t need to be an absolute right answer, however, as inter-team discussion afterwards can be very revealing. However, beginning students can be uncomfortable with this.
- **Simultaneous reporting:** Teams can’t hear other teams’ choices and then simply choose to agree or disagree.

**TBL TIPS**

**TEAMS:** Optimal size is 5-6. Don’t let students self-select; assign them. If you have more than one TBL, keep the teams together.

**PREPARATION:** This should focus the students on the topic but should not provide an exhaustive (or exhausting) amount of detail. Review articles or book chapters are preferred over primary sources. If you can’t find exactly what you are looking for, consider writing something yourself. For a typical 2 hour TBL, readings should probably be no more than 10-15 pages

**RATs:** Should be based on the reading and should be closed book; in the gRAT, students should only use each other for resources to answer the questions. Getting the RATs to be an appropriate level of difficulty is one of the challenges of TBL, and may have to be done iteratively over years. Mean for an iRAT should probably be in the range of 60%, and that for a gRAT in the range of 80%.

A key tenet of TBL is the idea of immediate feedback. One of the best ways of doing this with the gRAT is to use the Immediate Feedback Assessment Technique (“scratch-off” cards), available at: http://www.epsteineducation.com/home/ If the IF-AT is used appropriately there typically does not need to be extensive discussion after the gRAT, but students should have an opportunity to ask questions and defend answers.
**EXERCISES:** These should be open book, but care should be taken that teams don’t break up into individuals using computers by themselves. If the GRAT goes well, the right tone is usually set. Teams should report their findings simultaneously. Some of the richest aspects of TBL come from having teams defend their choice against other teams, but students shouldn’t be left with the idea that everything is up for debate; some of the best questions are those in which more than one answer might be defensible, but in which there is a clear consensus that one is best.

**GRADING:** If you grade TBLs, don’t simply grade the IRAT; it sends the message that the group work is not important. In fact, group work should significantly outweigh individual work. Because TBLs won’t be a main contributor to the grade don’t worry too much about stronger students carrying weak ones. Something like a 30/30/40 split for IRAT, GRAT and exercises is a possible breakdown. If you only have one or two TBLs, counting grades toward a final course grade may not even be necessary. TBL experts advocate peer evaluation as an important component. I have not found students receptive to this and I would recommend against in short courses with few sessions. It is more important when TBL is a significant contributor to a much longer course, (and serves to check the problem of the weaker student being carried)

**TECHNOLOGY:** On line RATs (e.g. with Blackboard), or use of clickers for simultaneous reporting are fine provided they work appropriately. iRATs especially can be done through BB and makes grading easier. However, whatever is used for the GRAT and exercises must maintain the principles of immediate feedback and simultaneous reporting; I haven’t found anything better than the scratch-off cards for the GRAT, and holding up colored index cards works quite well for the application exercises.