Review of Year 1 MICR 111 Immunology and Virology course

• Course occurs in the winter term of Year 1
• Course Director(s) – David Mullins
• Course has 48 curricular hours
  – 5 are assessment hours
  – voluntary reduction of 1 hour since prior review
• Course was last reviewed in April, 2016 and presented to the MEC in May, 2016

Date of this review: April 2018
Review presented to MEC: May 2018
• Revise and update the course layout and content – Update Course Aims (anticipated summer ‘16) – Greater integration of Immunology and Virology content – Ensure correspondence with USMLE Brochure – Reassignment of lectures from underperforming instructors ✓ [e.g. brought back immunology into virology sessions to reinforce]

• Revise and update session objectives – Ensure correct format and consistent presentation of session objectives – Use session objectives to establish expectations for learning and assessment across the course ✓
Action Plan from Prior Review

• Assess potential redundancy – Course Director to meet with peers from Pathology to identify and eliminate unplanned redundancy – Course Director to work with peers from CTO, SBM, and Pharmacology to coordinate planned redundancy✓

• Improve assessment and feedback – Addition of higher order, problem-solving test items [replaced many] – Improve feedback on small group presentations, including expanded assessment rubric and peer feedback [wasn’t able to do this year; future goal]
Action Plan from Prior Review

- Decrease traditional/didactic lecture in favor of active learning content in immunology and virology

<table>
<thead>
<tr>
<th></th>
<th>Actuals</th>
<th>Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AY14-15</td>
<td>AY15-16</td>
</tr>
<tr>
<td>Immunology</td>
<td>20/24 (83%)</td>
<td>19/24 (79%)</td>
</tr>
<tr>
<td>Virology</td>
<td>17/20 (85%)</td>
<td>17/20 (85%)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>37/44 (84%)</td>
<td>36/44 (82%)</td>
</tr>
</tbody>
</table>

- Engage DCAL and GAME for additional guidance

Progress has been made since prior review; ongoing effort
<table>
<thead>
<tr>
<th>Course Objectives</th>
<th>To Program Objectives</th>
<th>Course Objective Mapping</th>
<th>To Session Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Describe the structure and function of immune organs and tissues</td>
<td>MS.2</td>
<td>11%</td>
<td>30</td>
</tr>
<tr>
<td>2 Describe the effector cells and molecules of the immune system</td>
<td>MS.2</td>
<td>14%</td>
<td>48</td>
</tr>
<tr>
<td>3 Describe the characteristics and differentiate the functions of adaptive and</td>
<td>MS.2</td>
<td>6%</td>
<td>23</td>
</tr>
<tr>
<td>innate immunity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Recognize the genetic basis of immunologic receptor diversity</td>
<td>MS.2</td>
<td>4%</td>
<td>13</td>
</tr>
<tr>
<td>5 Recognize the cellular basis for immunologic memory</td>
<td>MS.2</td>
<td>0.8%</td>
<td>4</td>
</tr>
<tr>
<td>6 Assemble the key components of an effective immune response, from initiation</td>
<td>CS.7, MS.2, MS.4</td>
<td>6%</td>
<td>25</td>
</tr>
<tr>
<td>to resolution</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Describe and categorize hypersensitivity reactions</td>
<td>MS.2</td>
<td>0.8%</td>
<td>4</td>
</tr>
<tr>
<td>8 Recognize and distinguish immune-based diseases, including autoimmune diseases</td>
<td>MS.2</td>
<td>5%</td>
<td>16</td>
</tr>
<tr>
<td>and immune deficiencies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 Interpret immunologic-based assays and relate the results in a patient-</td>
<td>CS.7, MS.1, MS.2</td>
<td>4%</td>
<td>17</td>
</tr>
<tr>
<td>appropriate context</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Design a potential immunotherapy approach for the treatment of cancer</td>
<td>CS.1, CS.3, CS.7, CT.1, CT.2, CT.4, CT.5, MS.1, MS.2, MS.5, P.2, PH.2, PPLD.1, PPLD.7</td>
<td>2%</td>
<td>8</td>
</tr>
<tr>
<td>11 Describe the structures, replication patterns, and life cycles of viruses</td>
<td>MS.2</td>
<td>9%</td>
<td>28</td>
</tr>
<tr>
<td>12 Explain the pathogenesis of viral diseases</td>
<td>MS.2</td>
<td>11%</td>
<td>32</td>
</tr>
<tr>
<td>13 Recognize the patterns of viral spread, including epidemics and pandemics</td>
<td>MS.2</td>
<td>7%</td>
<td>21</td>
</tr>
<tr>
<td>14 Design a patient directed presentation on the etiology and prevention of an</td>
<td>CS.1, CS.3, CS.7, CT.1, CT.2, CT.4, CT.5, MS.1, MS.2, MS.5, P.2, PH.2, PPLD.1, PPLD.7</td>
<td>2%</td>
<td>8</td>
</tr>
<tr>
<td>important viral disease</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 Describe anti-viral therapeutics</td>
<td>MS.2</td>
<td>5%</td>
<td>11</td>
</tr>
<tr>
<td>16 Explain the biological basis of vaccination</td>
<td>MS.1, MS.2</td>
<td>8%</td>
<td>19</td>
</tr>
<tr>
<td>17 Formulate a potential vaccine strategy that considers the biomedical, ethical,</td>
<td>CS.1, CS.3, CS.7, CT.1, CT.2, CT.4, CT.5, MS.1, MS.2, MS.5, P.2, PH.2, PPLD.1, PPLD.7</td>
<td>3%</td>
<td>6</td>
</tr>
<tr>
<td>social, and economic setting of the patient population</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 Lead a discussion on a disease condition and assess peer understanding of</td>
<td>CS.1, CS.3, CS.7, CT.1, CT.2, CT.4, CT.5, MS.1, MS.2, MS.5, P.2, PH.2, PPLD.1, PPLD.7</td>
<td>0.7%</td>
<td>1</td>
</tr>
<tr>
<td>the topic</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The number of course objectives is appropriate and all course objectives have session objectives that map to them.

Objectives address six of the eight Geisel competencies including medical knowledge, communication skills, collaboration and teamwork, professionalism and population health.

The mapping of course objectives to the Geisel competencies in Ilios was last updated in Sept, 2017 by the course director and checked for accuracy during this review.
• Course objectives are provided on Canvas
• Course objectives are written in the correct format
• Session objectives are provided in the course materials with the exception of:
  – Active Learning Sepsis session (TBL)
  – Hypersensitivity II (if same objectives as session I, just needs to be entered into IlIOS)
  – Student project presentation sessions
  – Virology Group Discussion 3-Human Immunodeficiency Virus session
• Session objectives are written in the correct format
Issues of Redundancy

• Unplanned redundancy was not identified at this time; was addressed in prior reviews
• In the past there was unintended redundancy with the General Pathology course; there is a potential for this to occur again due to the new course leadership and faculty in the pathology course
Health and Values Goals

**Ethics** – “Identify key concepts in health care ethics and demonstrate an ability to recognize ethical issues arising in patient care and population health and to think critically and systematically in applying an ethical analysis”

**Cultural Awareness** – “Demonstrate an understanding and skill in managing patient care of people of diverse cultures, social, economic standing and belief systems”

**Health Equity** – “Identify the root causes and approaches for addressing health disparities locally and globally”

**Resilience** – Demonstrate knowledge of skills and practices to prevent and address stress and maintain resilience in caring for patients and oneself

**Compassion and Empathy** – “Demonstrate abilities to understand each patient’s experience of illness, adapt scientifically appropriate care to conform to that patient’s needs, and communicate in terms that each patient can understand”

There also are synergies to health law, communication skills, professionalism (as LCME requires).
Does the course include health and values content?

- Polio Vaccines lecture/active learning session: Describe the socio-economic and cultural aspects that may impact the deployment of polio vaccines, and formulate a potential vaccine strategy that considers the biomedical, ethical, social, and economic setting of the patient population.
- HIV lecture: Critique social amplifiers of HIV transmission.
- Zika lecture: Discuss the social and ethical implications of Zika infection.
- Small Group Sessions (6): What are the implications for the health care system and society of (disease condition)?
- Hypersensitivity lecture: Genetic and environmental factors that influence predisposition to allergy.

Are the health and values topics noted in the course and session objectives?

- Yes, as noted above.
Suggestions from H&V Director

• H&V recommendations
  – session 42, 49 (could add mapping for objective 17)
  – the course does discuss the issue of vaccination related to an individual's rights/public health needs [could be more explicit in an objective, however concern about how it would be assessed – perhaps continue to mention but not add to objective?]
**Medical Science**

1. Describe core nutrition science concepts, such as nutritional biochemistry and metabolism, digestion, endocrinology, and adverse effects of malnutrition on human health.
2. Explain the links between nutrition science and other sciences, including those of the environment, exercise, toxicology, and pharmacology.
3. Apply core nutrition science knowledge to understand and manage human health and disease through the lifespan.

**Clinical Care**

1. Perform a nutrition assessment and accurately measure anthropometrics.
2. Perform a complete nutritional exam to assess for presence of malnutrition.
3. Interpret, develop, and implement a nutrition plan for treatment, including nutritional additions or restrictions, culinary skill development, artificial nutrition support, and supplementation.

**Population Health**

1. Explain the impact of nutrition on individual and population health and disease.
2. Assess the impact of social, environmental, behavioral, economic, cultural, and personal factors on the nutritional health of individuals, and the incidence and burden of disease in populations.
3. Explain and exemplify the physician’s role for promoting nutrition in public health.
Communication Skills
1. Demonstrate empathy for individuals’ concerns, and be respectful of others’ perspectives and personal, cultural, and religious dietary restrictions and beliefs, and communicate nutrition advice respectfully and without judgment.
2. Promote positive behavioral change through nutrition-specific motivational interviewing and cognitive behavioral therapy.
3. Translate nutrition science concepts into useful information to educate patients, families, peers, and others.

Personal, Professional, and Leadership Development
1. Engage in lifelong learning to improve one’s performance in the application of nutrition science.
2. Apply nutrition science and culinary competency to enhance resiliency and physician self-care.
3. Advocate for environments that promote healthy nutritional lifestyles in the community, while removing any existing barriers.

Evaluation and Improvement
1. Identify and utilize healthcare and community resources to provide nutrition care and improve patient outcomes and patient satisfaction.
2. Identify credible, evidence-based sources of nutrition information and apply knowledge gained from the literature to clinical care, teaching, research, and population health.

Collaboration and Teamwork
1. Recognize and capitalize on different roles and strengths of team members, including the clinical dietitian, to develop and address shared goals, and foster a working relationship with all team members built on mutual respect and trust.
2. Demonstrate the ability to share and allocate responsibilities among team members.
Does the course include nutrition content?

- Antibodies: How nutrition (and microbiota) impact neonatal health
- Hypersensitivity: Food allergies

Are the nutrition topics noted in the course and session objectives?

- No - additional aims to be developed and added regarding nutrition and immunity
Summary of Objectives/Course Content

- Course objectives are appropriate; a few sessions are missing session objectives in Ilios.
- There is a potential for unplanned redundancy between the Immunology/Virology and Pathology courses since the course faculty in Pathology has changed recently and many have not been involved in the year 1 curriculum previously.
- The feasibility for incorporating nutrition content has not been fully explored at this time.
Course Learning Opportunities

- Lecture 29 hrs. (61%)
- Peer Teaching 7 hrs. (15%)
- PBL 1 hr. (2%)
- TBL 4 hrs. (8%)
- Discussion, Small Group 1 hr. (2%)
- Independent Learning 1 hr. (2%)
- Assessment 5 hrs. (10%)
• The course includes some novel activities including:
  – Peer teaching sessions where students present a topic to their colleagues in small group sessions
  – Student project involving designing an “infographic” for a particular virus (see examples on next slide)
• Lectures and student presentations were mentioned most often by students as aspects of the course that were particularly well done
• Optional reviews were offered prior to each assessment
Examples of infographics from student projects

Dengue Virus

- arbovirus, flavivirus, enveloped, dsRNA, DENG 1, DENG 2, DENG 3, DENG 4

Primary Infection

- fever, headache, ocular pain, musculoskeletal pain, rash, bleeding.

Hemorrhagic Fever

- persistent fever, plasma leakage, thrombocytopenia, hemorrhage

Secondary Infection

- milder symptoms

Dengue Shock Syndrome

- severe plasma leakage, drop in body temperature, dangerously low blood pressure, organ failure, death

Supportive Care

- access to clean water, safe housing, and healthcare is a human right.

Prevention

- insect repellent, mosquito nets, no standing water

Treatments

- blood, fluids, antibiotics, antimalarials

Ethics

- funding & support from the developed world is necessary.

Epigenetics

- no vaccine currently available

Transmission

- mosquito bite

Why You Probably Shouldn’t Have a Pet Bat

Rabies

Most often caused by Rabies Virus, but can also be caused by other members of the Lyssavirus genus.

Structure & Virology

- Enveloped
- Bullet-shaped

Pathobiology

- Non-segmented, negative-sense RNA
- Spike protein (S), M, G, N, L

Clinical Symptoms

- Low-grade fever, Chills, Malaise, Myalgia, Weakness, Fatigue, Anorexia, Sore Throat, Nausea/Vomiting, Headache, Paresthesia, Encephalitic rabies

Epidemiology

- Worldwide distribution
- 50,000-70,000 deaths per year
- In developing countries, rabid dogs account for 90% of the transmission to humans

Transmission

- Rabies transmitted by infected saliva through a bite or wound

Treatment

- Local treatment of wound
- Anti-Rabies vaccine
- Immobilization
- Pain management
- Psychological support

Recommended Treatment

- None
Summary regarding Pedagogy

• There are a variety of pedagogies in the course
• Percentage of lecture hours is slightly higher than the percentage recommended by the MEC (40-50% of course hours), however students highly valued lectures in this course
• Student presentations (in addition to lectures) were most often cited by students as aspects of the course that were particularly well done; clear expectations provided for these assignments likely contributed to their success
# Assessment

<table>
<thead>
<tr>
<th>Assessment Item</th>
<th>Percentage of Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiz 1 (Immunology content)</td>
<td>10% of course grade#</td>
</tr>
<tr>
<td>Quiz 2 (Immunology content)</td>
<td>10% of course grade#</td>
</tr>
<tr>
<td>Immunology Small Group Presentations (Team Grade)</td>
<td>10% of course grade</td>
</tr>
<tr>
<td>Immunology Lab Exercise</td>
<td>5% of course grade</td>
</tr>
<tr>
<td>Immunology Team Project (Team Grade)</td>
<td>5% of course grade</td>
</tr>
<tr>
<td>Quiz 3 (Virology content)</td>
<td>10% of course grade#</td>
</tr>
<tr>
<td>Quiz 4 (Virology content)</td>
<td>10% of course grade#</td>
</tr>
<tr>
<td>Virology PBL</td>
<td>5% of course grade</td>
</tr>
<tr>
<td>Virology Team Project (Team Grade)</td>
<td>10% of course grade</td>
</tr>
<tr>
<td>Active Learning Assignments</td>
<td>5% of course grade</td>
</tr>
<tr>
<td>Final Exam (Comprehensive)</td>
<td>25% of course grade</td>
</tr>
</tbody>
</table>

#Lowest quiz grade will count 5% of final grade.
Assessment for Course Objectives

• Objectives 1-9, 11-13, 15-16 cover aspects of medical knowledge
  – assessed on quizzes/exams, lab exercise

• Objective 10: *Design a potential immunotherapy approach for the treatment of cancer*
  – assessed during student presentations

• Objective 14: *Design a patient-directed presentation on the etiology and prevention of an important viral disease*
  – assessed with infographic project
• Objective 17: Formulate a potential vaccine strategy that considers the biomedical, ethical, social, and economic setting of the patient population
  – assessed during TBL session on polio
• Objective 18: Lead a discussion on a disease condition and assess peer understanding of the topic
  – assessed during student presentations
Summary regarding Assessment

• Numerous activities exist for students to receive feedback on their progress and the grading policy reflects this

• All course objectives in the course are currently being assessed
Measures of Quality – Graduation Questionnaire

How well did your study of the following sciences basic to medicine prepare you for clinical clerkships and electives?

<table>
<thead>
<tr>
<th>Percentage of Respondents Selecting Each Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Immunology</td>
</tr>
<tr>
<td>All Medical Schools</td>
</tr>
<tr>
<td>2017</td>
</tr>
<tr>
<td>Dartmouth-Geisel</td>
</tr>
<tr>
<td>2017</td>
</tr>
<tr>
<td>2016</td>
</tr>
<tr>
<td>2015</td>
</tr>
<tr>
<td>2014</td>
</tr>
<tr>
<td>2013</td>
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</tbody>
</table>

Data from AAMC Graduation Questionnaire; no data available for virology
# Measures of Quality – Step I

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Biochemistry</td>
<td>0.03</td>
<td>-0.04</td>
<td>0.08</td>
<td>0.023</td>
</tr>
<tr>
<td>Genetics</td>
<td>0.09</td>
<td>-0.36</td>
<td>0.15</td>
<td>-0.04</td>
</tr>
<tr>
<td>Gross Anatomy/Embryology</td>
<td>0.16</td>
<td>-0.12</td>
<td>-0.06</td>
<td>-0.006</td>
</tr>
<tr>
<td>Histology/Cell Biology</td>
<td>0.07</td>
<td>-0.09</td>
<td>0.01</td>
<td>-0.003</td>
</tr>
<tr>
<td><strong>Microbiology/Immunology</strong></td>
<td><strong>0.02</strong></td>
<td><strong>-0.01</strong></td>
<td><strong>0.09</strong></td>
<td><strong>0.03</strong></td>
</tr>
<tr>
<td>Pathology</td>
<td>0.12</td>
<td>-0.10</td>
<td>0.05</td>
<td>0.023</td>
</tr>
<tr>
<td>Pharmacology</td>
<td>-0.02</td>
<td>0.0</td>
<td>0.09</td>
<td>0.023</td>
</tr>
<tr>
<td>Physiology</td>
<td>0.11</td>
<td>0.06</td>
<td>0.09</td>
<td>0.087</td>
</tr>
</tbody>
</table>

*values reported for core disciplines are SD above the US/Can mean for Geisel mean scores
## Measures of Quality – Course Evaluation

<table>
<thead>
<tr>
<th><strong>Overall Quality - Year 1 courses</strong></th>
<th><strong>AY 15-16</strong></th>
<th><strong>AY 16-17</strong></th>
<th><strong>AY 17-18</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Science of Microbial Disease</td>
<td>4.10 (80.6%)</td>
<td>4.73 (79.3%)</td>
<td></td>
</tr>
<tr>
<td>Biochemical and Genetic Basis of Medicine</td>
<td>4.40 (94.6%)</td>
<td>4.54 (94.6%)</td>
<td>4.61 (61.3%)</td>
</tr>
<tr>
<td>Cells, Tissues and Organs</td>
<td>4.06 (95.7%)</td>
<td>4.21 (96.7%)</td>
<td>4.05 (59.8%)</td>
</tr>
<tr>
<td>Human Anatomy and Embryology I</td>
<td>4.04 (94.7%)</td>
<td>4.61 (94.6%)</td>
<td>4.39 (60.9%)</td>
</tr>
<tr>
<td>Human Anatomy and Embryology II</td>
<td>4.43 (92.6%)</td>
<td>4.74 (59.3%)</td>
<td>4.36 (92.6%)</td>
</tr>
<tr>
<td>Immunology and Virology</td>
<td>3.94/3.83 (91.4%)</td>
<td>4.70 (69.6%)</td>
<td>4.46 (90.3%)</td>
</tr>
<tr>
<td>Metabolic Basis of Disease</td>
<td>4.48 (89.2%)</td>
<td>4.25 (70.3%)</td>
<td>4.56 (91.6%)</td>
</tr>
<tr>
<td>Neuroscience</td>
<td>3.32 (79.8%)</td>
<td>2.93 (82.4%)</td>
<td></td>
</tr>
<tr>
<td>On Doctoring</td>
<td>4.10 (39.2%)</td>
<td>4.07 (100%)</td>
<td></td>
</tr>
<tr>
<td>Pathology</td>
<td>3.06 (87.2%)</td>
<td>2.61 (80%)</td>
<td></td>
</tr>
<tr>
<td>Patients and Populations</td>
<td>2.77 (82%)</td>
<td>2.79 (74.5%)</td>
<td></td>
</tr>
<tr>
<td>Physiology-Cardiovascular</td>
<td>3.41 (95.7%)</td>
<td>3.88 (93.5%)</td>
<td>3.00 (45.2%)</td>
</tr>
<tr>
<td>Physiology-Endocrine</td>
<td>3.52 (92.6%)</td>
<td>3.63 (68.5%)</td>
<td>4.13 (63.8%)</td>
</tr>
<tr>
<td>Physiology-Renal</td>
<td>3.63 (92.6%)</td>
<td>3.46 (68.5%)</td>
<td>2.92 (90.4%)</td>
</tr>
<tr>
<td>Physiology-Respiration</td>
<td>3.41 (95.7%)</td>
<td>3.80 (92.4%)</td>
<td>4.53 (64.5%)</td>
</tr>
</tbody>
</table>

*Scale [1=poor; 2=fair; 3=good; 4=very good; 5=excellent]; student participation rate in parentheses*
# Measures of Quality – Course Evaluation

*student participation rate on course evaluation  
**new evaluation question in 17-18

^AY15-16 Immuno & Viro evaluated as two courses. Measures of Quality above is an average of the two courses.

<table>
<thead>
<tr>
<th>Measure of Quality</th>
<th>MICR 111 AY 15-16 (91%)*</th>
<th>MICR 111 AY 16-17 (69.6%)*</th>
<th>MICR 111 AY 17-18 (90.3%)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pace and workload**</td>
<td>N/A</td>
<td>N/A</td>
<td>4.42</td>
</tr>
<tr>
<td>Primary course materials/text**</td>
<td>N/A</td>
<td>N/A</td>
<td>4.18</td>
</tr>
<tr>
<td>Organization of the course</td>
<td>3.73^</td>
<td>4.62</td>
<td>4.30</td>
</tr>
<tr>
<td>Congruence of assessment questions to material emphasized in course</td>
<td>3.73^</td>
<td>4.53</td>
<td>4.39</td>
</tr>
<tr>
<td>Overall satisfaction of course</td>
<td>3.89^</td>
<td>4.70</td>
<td>4.46</td>
</tr>
</tbody>
</table>
Strengths:

- **Pace/Accessibility of the material**
  - “Had not taken any immunology before this year, I felt this course did a good job of making the clinically relevant topics accessible to those without significant background.”
  - “The class was paced very well and presented concepts in an order that made sense.”

- **Supportive learning environment**
  - “Dr. Mullins is wonderful. He cares about our learning and well being. He clearly wants us all to succeed and be healthy as we do it. He teaches the material in an interesting, digestible, and not-overwhelming way that is refreshing.”
  - “Dr. Mullins is amazing - great professor and clearly cares about the class and the way we learn! Great learning environment cultivated and generated true interest in the material”
Strengths:

• Course resources
  – “I think that the course resources (slides, notes, and flashcards) were all excellent - and the practice quizzes were great.”
  – “Notes, slides, and lecture were all clear, well-organized, and relevant.”

• Assessments
  – “Very fair exams and focus on most high-yield material.”
  – “Knew exactly what to expect on quizzes and exams.”
Suggestions for Improvement:

• Spacing of class activities
  – “My only suggestion for improvement would be not to backload the course so much. I felt that I was scrambling at the end to put together a presentation, a project, a questionnaire, etc. There was so much at the end and it could have been more spread out.”
  – “It felt like there was a lot of projects and assignments due at the end of the course. This made it difficult to prepare for the quiz and final that were also back to back.”

• Number of assignments
  – “My only comment is that I think that the number of little assignments on canvas hindered my learning somewhat since they sometimes distracted from bigger picture and deeper learning.”
  – “Less busy work, it seemed to come in intense waves during already stressful times. Otherwise a great class.”
Suggestions for Improvement:

• Advance notification of assignments
  – “I think sometimes assignments in this course kind of "crept up" on us. I am always on top of my assignments, but Immunology was the only course where I almost missed a readiness quiz or was surprised by a project coming up. I think it would be helpful to have those assignments up by the sunday of that week so that when we are planning our week we know what is coming.”
  – “I also felt frustrated when an assignment would become available during the week since I (and likely others) carefully plan out my studying and week during the weekend...”

• Course materials
  – “Can you add more information to the slides? Some of the slides were difficult to understand, or I would fall behind writing notes while watching lectures. More explanations on the slides would be very helpful!”
  – “I wish all the lectures had associated notes.”
  – “I would just like to have more practice quizzes/questions.”
Other comments

• “Dr. Mullins is the most caring professor, and teaches with such genuine enthusiasm. Definitely one of the best professors we've encountered during our first year.”
Summary regarding Measures of Quality

• Under Dr. Mullins leadership, the course has become one of the top three courses in year one over the last few years and is rated in the “very good-excellent” range by students.

• Strengths of the course include a supportive learning environment and Dr. Mullins teaching (i.e. material is clearly presented, organized well, accessible to all learners, clinically relevant).

• Suggestions for improvement include spreading assignments better over the term (not clustered at the end), providing more advanced notice regarding assignments, and to reflect on the number of assignments (do they all contribute to meaningful learning?)
Recommendations

• Draft session objectives for the few sessions that are missing objectives and submit to Med Ed Office

• Continue to communicate with the Pathology course director to avoid unplanned redundancy in the Immunology/Virology and General Pathology courses

• Explore opportunities to make the nutrition content in the course explicit in session objectives

• Continue to incorporate active learning pedagogies into the course to meet MEC guidelines regarding percentage of lectures

• Consider improvements to scheduling/announcing assignments in the course as suggested by students
Action Plan

• Update and add learning objectives, as needed, for all sessions
  – Add specific session objectives related to Health and Values content
• Introduce additional nutrition content, with specific session objectives
• Improve instructor and peer feedback for small group sessions (student presentations)
• Meet with Pathology course director; eliminate unplanned redundancy
• Further reduce didactic lecture in favor of additional active learning pedagogies
• Distribute assignments across the term, with additional notice to students