The Attack and Defense module is an integrated and innovative look at microbiology, immunology, and infectious disease including public and international health issues. Students are prepared for clinical encounters requiring diagnosis, treatment, and preventive measures for immunological conditions and disorders and infectious diseases by fostering critical thinking skills. The learning environment promotes professional identity formation, effective communication, and professionalism. Students acquire a broad understanding of normal and abnormal immune system function through active, collaborative learning activities.

### Module Pedagogy

- **Lecture:** 34 hours
- **Team-based Learning:** 29 hours
- **Self-study using guided reading:** 7 hours
- **Online cases:** 12 hours
- **Histopathology Lab:** 14 hours
- **Case-based Large Group Discussion:** 48 hours
- **Conferences:** 6 hours
- **Patient Interview by faculty:** 2 hours

### Module Goals

In preparation for clinical practice in the areas of immunology and medical microbiology this module will:

- Provide knowledge for approaching and managing infectious diseases in healthy and immunocompromised people.
- Provide, using case-based approaches, opportunities for students to develop and practice problem-solving skills.
- Provide, in small and large group settings, opportunities for students to develop and practice essential communication skills.
- Allow students to develop professional identity and necessary teamwork skills to operate as an effective member of a healthcare team.

### Weekly Themes

**Week 1:** Cellular Basis of the Immune Response  
**Week 2:** Immune System & Disease: Overreactions  
**Week 3:** Immune System & Disease: Consequences of Failure  
**Week 4:** Intro to Infectious Disease: Gram-positive Bacteria  
**Week 5:** Gram-negative Bacteria and Disease  
**Week 6:** Thanksgiving Week (online content/varied topics)  
**Week 7:** Viral Pathogens and Disease  
**Week 8:** Pathogenic Fungi, Protozoa and Helminths

### Case-Based Synthesis Topics

**Week 1:** Severe Combined Immune Deficiency Disease  
**Week 2:** Anaphylaxis  
**Week 3:** Inflammation-Influenza (cytokine storm)  
**Week 4:** Methicillin Resistant *Staph aureus* (MRSA)  
**Week 5:** Meningococcal meningitis  
**Week 6:** Online content  
**Week 7:** Human Papilloma Virus/HIV  
**Week 8:** Aspergillosis or Malaria

### Major Competencies

2.1,2,2.3,2.4,2.5 Demonstrate knowledge of the normal structure & function of the immune system, pathogenesis/pathophysiology, clinical manifestations, pharmacotherapeutic modalities & epidemiology of immune disorders and infectious diseases.  
3.4 Perform basic interpretation of commonly used immunologic and non-immunologic diagnostic tests.  
3.6 Demonstrate skills of clinical reasoning & clinical problem solving in the approach to immune disorders & infectious diseases.  
3.9 Demonstrate effective & appropriate communication of medical information, both in writing & verbally through case studies in immune disorders & infectious diseases.

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**Week 2**

<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
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</thead>
<tbody>
<tr>
<td>8-8:50 AM</td>
<td>Self-study with Online Individual Readiness Self-Assessment</td>
<td>Autoimmunity Discussion, Large Group Hour 1 of 2</td>
<td>Immunopathology Discussion, Large Group</td>
<td>Transplantation: Timelines in Diagnosis - TBL Session</td>
<td>Case of the Week Quiz Individual and Group Quizzes Anaphylaxis</td>
</tr>
<tr>
<td>9-9:50 AM</td>
<td>Complement Lecture</td>
<td>Autoimmunity Discussion, Large Group Hour 2 of 2</td>
<td>Transplantation Rejection Immune Mechanisms Discussion, Large Group</td>
<td>Transplantation: Timelines in Diagnosis - TBL Session</td>
<td>Group Case Activity Anaphylaxis</td>
</tr>
<tr>
<td>10-10:50 AM</td>
<td>Hypersensitivity Discussion, Large Group Hour 1 of 2</td>
<td>Immunodeficiency Disease Discussion, Large Group Hour 1 of 2</td>
<td>Immunosuppressive Drug Therapy Lecture</td>
<td>Histology/Pathology Lab Lupus vasculitis Tb granuloma</td>
<td>Group Case Activity Anaphylaxis</td>
</tr>
<tr>
<td>11-11:50 AM</td>
<td>Hypersensitivity Discussion, Large Group Hour 2 of 2</td>
<td>Immunodeficiency Disease Discussion, Large Group Hour 2 of 2</td>
<td>Transplantation-Stem Cell Strategies Conference</td>
<td>Histology/Pathology Lab Renal transplant rejection GVHD</td>
<td>Interdisciplinary Rounds</td>
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