<table>
<thead>
<tr>
<th>Student cognitive skills development as levels of understanding are built.</th>
<th>Bloom's Level</th>
<th>Biomedical reasoning</th>
<th>Clinical reasoning</th>
<th>Learning Objectives – sample trigger words</th>
</tr>
</thead>
</table>
| Student recombines conceptual elements together to create a new plan, proposal or product. | Synthesize & Create | • **Predict** the results of abnormalities on a molecular, cellular or organ level on the function of an organ system.  
• **Construct** a model of how abnormalities in one biological system affect other systems.  
• **Create** a work-up or therapeutic management plan for a given patient, based on an understanding of the underlying mechanism of disease and biochemical pathways of diagnostic testing and therapies (reinforce high value care). | • **Propose** a work-up for a given patient’s clinical presentation.  
• **Develop** a management plan for a given patient’s diagnosis or health care maintenance.  
• With appropriate supervision, **manage** a patient’s therapeutic course for a common clinical condition. | • **Construct**  
• **Develop**  
• **Predict**  
• **Propose**  
• **Plan**  
• **Manage** |
| Student makes quantitative and qualitative judgments and decisions about inter-related concepts and their elements. | Evaluate | • **Appraise** models of physiologic effects of alterations in organ function.  
• **Choose** appropriate outcome measure to evaluate the effects of abnormalities in cellular or molecular processes.  
• **Defend** the diagnosis of a given patient, based on an understanding of the underlying mechanism of disease.  
• **Recommend** a laboratory investigation or therapeutic intervention based on an understanding of the underlying biochemical mechanism (reinforce high value care). | • **Justify** a provisional diagnosis for a given patient, based on the information known.  
• **Choose** the relevant laboratory results to including in a presentation on rounds for a given patient.  
• **Appraise** the medical literature pertaining to a given patient’s therapeutic regimen and select the best therapeutic option. | • **Appraise**  
• **Choose**  
• **Defend**  
• **Justify**  
• **Decide**  
• **Conclude** |
| Student deconstructs concepts into constituent parts, and manipulates elements of inter-related concepts as needed in order to complete a task or solve a problem. | Analyze | • **Compare** the cellular and metabolic mechanisms of drugs, normal physiological adaptations or disease processes.  
• **Contrast** the pathophysiological mechanisms for the several disorders in a patient’s differential diagnosis.  
• **Debate** the utility of given laboratory investigations or therapeutic interventions based on an understanding of their underlying biochemical mechanisms (reinforce high value care). | • **Defend** the differential diagnosis for a given patient, based on the information known.  
• **Discuss** additional information needed.  
• **Debate** the pro’s and con’s of a given patient’s options for therapy.  
• **Contrast** a given patient’s presentation with that of the classic presentation of the patient’s diagnosis. | • **Differentiate**  
• **Compare**  
• **Contrast**  
• **Question**  
• **Debate**  
• **Infer** |
| Student identifies, selects and uses facts and concepts to complete a task or solve a problem. | Apply | • **Solve** equations predicting the outcome of pathophysiological states.  
• **Interpret** a given patient’s clinical presentation and/or laboratory values, based on an understanding of normal and abnormal biochemical pathways or mechanisms of disease states. | • **Perform** a focused physical examination on a given patient, demonstrating the relevant physical findings.  
• **Consider** possible conditions for a given patient and create a differential diagnosis, based on the information known. | • **Demonstrate**  
• **Illustrate**  
• **Practice**  
• **Interpret**  
• **Solve**  
• **Modify** |
| Student constructs meaning from factual information and creates a usable mental model or representation (conceptual understanding). | Comprehend | • **Explain** a biochemical pathway.  
• **Describe** the mechanism by which the pathway may be disrupted in disease states. | • **Describe** classic or common presentations of clinical conditions or diseases.  
• **Summarize** the results of a given patient’s history.  
• **Organize** the findings from a physical exam. | • **Describe**  
• **Explain**  
• **Narrate**  
• **Summarize**  
• **Organize**  
• **Abstract** |
| Student recognizes and retrieves information from long-term memory (factual understanding). | Remember | • **List** the components of a biochemical pathway.  
• **Define** the findings in a normal and abnormal pathologic specimen. | • **Memorize** the template for taking a social history.  
• **Recall** the details of a given patient’s history.  
• **Define** characteristics of medical condition or diseases. | • **Define**  
• **Name**  
• **Memorize**  
• **Identify**  
• **List**  
• **Recall** |

**Building Understanding the Geisel Way: Cognitive Learning Objectives**