

Biology ETSI Sustainability Curriculum

Year	Content	Concepts	Pedagogy
Year 1 - 2020	Evolution of Circadian Rhythms	Living Staircase Evolution Structure and Function Information Flow, Exchange, and Storage Systems Biology	<ol style="list-style-type: none"> <li>1. Inquiry-based learning               <ol style="list-style-type: none"> <li>a. Body Temperature Tracking</li> </ol> </li> <li>2. Quantitative               <ol style="list-style-type: none"> <li>a. "Clicker" questions</li> </ol> </li> <li>3. Communication               <ol style="list-style-type: none"> <li>a. Think-pair-share</li> </ol> </li> <li>4. Science and Society               <ol style="list-style-type: none"> <li>a. Writing to learn (summaries, reflections, questions, etc.)</li> </ol> </li> <li>5. Assessment</li> </ol>
Year 2 - 2021	Cell biology and genetics of Circadian Rhythms	Living Staircase Evolution Structure and Function Information Flow, Exchange, and Storage Systems Biology	<ol style="list-style-type: none"> <li>1. Inquiry-based learning               <ol style="list-style-type: none"> <li>a. TBD</li> </ol> </li> <li>2. Quantitative               <ol style="list-style-type: none"> <li>a. Board writing</li> </ol> </li> <li>3. Communication               <ol style="list-style-type: none"> <li>a. PPT slides</li> </ol> </li> <li>4. Science and Society               <ol style="list-style-type: none"> <li>a. Case Studies</li> </ol> </li> <li>5. Assessment</li> </ol>
Year 3 - 2022	Role of Circadian Rhythms in Development, Physiology, Immunology, and Disease	Living Staircase Evolution Structure and Function Information Flow, Exchange, and Storage Systems Biology	<ol style="list-style-type: none"> <li>1. Inquiry-based learning               <ol style="list-style-type: none"> <li>a. TBD</li> </ol> </li> <li>2. Quantitative               <ol style="list-style-type: none"> <li>a. Worksheet design</li> </ol> </li> <li>3. Communication               <ol style="list-style-type: none"> <li>a. Drawing/Creating/Multimedia</li> </ol> </li> <li>4. Science and Society               <ol style="list-style-type: none"> <li>a. Problem-based learning eg. <a href="https://education.asu.edu/iteachells">https://education.asu.edu/iteachells</a></li> </ol> </li> <li>5. Assessment</li> </ol>

### Daily Plan

AM 1: Western instructors deliver content through modeling teaching techniques and making the teaching techniques explicit. Some Biology Education Research findings will be shared as both a means to provide evidence for these techniques and expose students to primary literature in digestible doses. This will also help to bridge some of the education research data that Nicole A. plans to include in the physics section with some of the neuroscience data related to learning that Gillian included.

AM 2: Group work for students to develop their own micro-lessons ~10 minute-long lessons – they will delve into content more deeply through integration of content with pedagogy to include in their lesson. This will include creating one assessment question each day. Either in class or each evening these will be reviewed by Western instructors for revision by the students to include on a final exam.

PM: 3 groups are randomly selected each day to teach their lessons to the class – Time is allotted for content-related questions and reflection/critique of teaching methods following each micro-lesson.