Assessment of Course Student Learning Outcomes

<table>
<thead>
<tr>
<th>Gen Ed SLOs Assessed</th>
<th>Degree or Certificate SLOs Assessed</th>
<th>Course Level SLOs Assessed</th>
<th>Assessment (Performance) Tasks &amp; Success Criteria</th>
<th>Assessment Results &amp; Analysis*</th>
<th>Action(s) Proposed</th>
<th>Budget/Resources Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Which align with the degree or certificate?</td>
<td>Which align with the course level SLO(s) being measured?</td>
<td>• What do students have to do to show achievement of the SLOs?</td>
<td>• What strengths did the assessment identify?</td>
<td>• What changes, if any, do you plan to make in your material or instructional approach in response to the results of the assessment and your analysis?</td>
<td>• How much will your proposed actions cost the department or college?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• What are the various projects or tasks that will be used to assess the SLO(s)?</td>
<td>• What areas can be strengthened?</td>
<td>• How will your proposed actions lead to the achievement of the SLOs?</td>
<td>• Will the actions require resource allocation?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• What is your benchmark?</td>
<td>• How did the materials and instructional methods affect the achievement of the SLOs?</td>
<td></td>
<td>• Provide a cost estimate in personnel and other resources.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• How do you know if the SLO has been achieved successfully?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I-X AA

Describe how lipids, carbohydrates, proteins and nucleic acids are digested, assimilated, and catabolized to obtain energy and raw materials.

Lecture topics cover metabolism and energy use in the body. Readings on topic are also cover in text readings. Students are tested on this topic with an oral group quiz and by exam questions. Students should get 75% of the following exam questions correct (from exam 3).

23. Before most molecules can enter the Krebs citric acid cycle, they must be converted to
   A) citric acid.
   B) oxaloacetic acid.
   C) carbon dioxide and water.
   D) NADH or FADH$_2$.
   E) acetyl-CoA.

24. In the process of respiration, a series of oxidation-reduction reactions in which energy in NADH and FADH$_2$ is liberated and transferred to generate numerous ATPs is
   a. Krebs cycle
   b. beta oxidation

Students received 50% correct. This is below the benchmark. This assessment showed that students have a general lack of understanding in how biological molecules are converted to ATP energy that the body uses. In lecture, the pathways are broken down and simplified. Students need to spend more time reading material such as this that is deemed challenging.

Students need to map out the biochemical process of respiration as an assignment. When they successfully accomplish this task then any further misconceptions can be addressed.

No additional funding is required.
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>25. Conversion of NAD(^+) to NADH is an example of</td>
<td>a. oxidation</td>
</tr>
<tr>
<td>26. During chemiosmosis in aerobic respiration, protons are pumped</td>
<td>C) out of the mitochondrial matrix into the space between the outer and inner mitochondrial membrane.</td>
</tr>
<tr>
<td>27. Glycogenesis is:</td>
<td>c. the process of glycogen formation</td>
</tr>
<tr>
<td>28. Lactic acid is produced as a result of the chemical reduction of</td>
<td>b. oxaloacetic acid</td>
</tr>
</tbody>
</table>

- c. electron transport chain
- d. glycolysis
- e. transition reaction

- a. oxidation
- b. reduction
- c. phosphorylation
- d. hydrolysis
- e. dehydration
29. The enzyme between the inner and outer mitochondrial membrane that is a hydrogen ion channel is:
   a. cytochrome
   b. ATP reductase
   c. ATP synthase
   d. citric acid synthase

30. Enzymes of the Krebs cycle are located in the
   a. cytosol
   b. nucleus
   c. peroxisomes
   d. mitochondria
   e. endoplasmic reticulum

Describe the anatomy and function of the circulatory, lymphatic, endocrine, digestive, urinary, and reproductive systems and discuss how these systems maintain homeostasis in the human body.

Lecture topics and text readings cover circulatory, endocrine, lymphatic, digestive, urinary and reproductive system. Students write a reaction paper on Diabetes (an endocrine disorder). Students are required to view the Miracle of Life, an online video, that covers reproduction and development, and write an optional extra credit reaction paper. Students should get 75% of the following exam questions correct

**Exam 1**
3. If you were to eat four sugar glaze doughnuts and a large pepsi, which hormone would you expect to be secreted at higher levels:
   a) insulin

Results for exam 1, students scored 75% correct.
Results for exam 2, students scored 75% correct.
Results for exam 3, students scored 75% correct.
Results for exam 4, students scored 60% correct.
The low score for Exam 4 on male reproduction may be due to students needing to spend more time reviewing hormone production and target cells.

Students need to map out the male and female reproductive cycle (hormones and target cells) as an assignment. When they successfully accomplish this task any further misconceptions can be addressed.

No additional funding is needed.
b) epinephrine
c) glucagon
d) cortisol
e) oxytocin

35. Which layer of the heart or pericardium serves the dual purpose of lining the pericardium and forming the outermost wall of the heart?
A) fibrous pericardium
B) parietal pericardium
C) visceral pericardium (epicardium)
D) myocardium

Exam 2
36. An individual who has had chicken pox rarely gets this disease again. This situation is an example of
A) biological control
B) negative feedback
C) active immunity
D) passive immunity

Exam 3
13. The region of the GI tract where most nutrients are absorbed is the
a. gizzard
b. stomach
c. large intestine
d. small intestine
e. cecum

Exam 4
7. Testosterone is secreted by
A) the anterior pituitary
B) the hypothalamus
C) interstitial cells or Leydig cells
D) Langerhans cells
E) Sertoli cells or sustentacular cells
Describe the link between the anatomy of human tissues and organs and their functions within the human body.

All topics listed above are described at cellular, gross anatomy, and physiological levels in lecture and in readings in the text. Students should get 75% of the following exam questions correct

**Exam 1**

20. The islets of Langerhans are the endocrine portion of the
   A) adrenal cortex  
   B) adrenal medulla  
   C) anterior pituitary gland  
   D) posterior pituitary gland  
   E) pancreas

Students scored 80%.

No additional changes are necessary.

No additional funding is required.

---

Discuss how negative feedback maintains homeostasis in the human body.

In particular, the endocrine system is one of the main homeostatic systems in the body and is controlled via negative feedback. However, homeostasis is continued through out all topics Details are in lecture and text readings. Students should get 75% of the following exam questions correct

**Exam 1**

5. Which one of these anterior pituitary hormones shows increased secretion in response to stress?
   A) prolactin  
   B) growth hormone  
   C) cortisol  
   D) thyroid-stimulating hormone  
   E) adrenocorticotropic hormone

Students scored 25%. Perhaps their confusion relates to searching for a common answer such as epinephrine, which is not one of the choices.

Students need to outline feedback systems and hormonal regulation as an assignment When they successfully accomplish this task then any further misconceptions can be addressed.

No additional funding is required.
A) thyroid-stimulating hormone  
B) adrenocorticotropic hormone  
C) luteinizing hormone  
D) prolactin

Explain how disease and disorders disrupt the homeostasis of each of the above body systems and discuss how common medical treatments and drugs are used to restore homeostasis.

Diseases such as diabetes, gigantism, Cushing's syndrome, and Seasonal Affective Disorder are detailed in lecture and text readings. Students should get 75% of the following exam questions correct

Exam 1
1. The hyposecretion of glucocorticoids results in a syndrome called:
   A) myxedema  
   B) Cushing's disease  
   C) eunuchoidism  
   D) Addison's disease  
   E) Grave's Disease  
2. The hormone produced by the pineal gland is:
   A) pinealtonin  
   B) melanocyte-stimulating hormone  
   C) oxytocin  
   D) melatonin  
   E) ACTH

Students scored 65%. Students need to be better prepared, which is often difficult until after the first exam has been taken. Overall, they need better study habits, outlining the text, reviewing notes, studying in groups and asking questions are my recommendations.

I propose a follow up after the exam. Students will have a set period of time to look at the exam questions and response to see their deficiencies. I don’t allow students to take the exam home, but they can request to see it during office hours.

No additional funding is required
| Write a research paper on a disease affecting one of the body systems using primary and secondary scientific literature. | Students write two reaction papers (2-3 pages in length, including references). One is on the topic of Diabetes in Hawaii. The other is on VOG in Hawaii. Students need to receive 80% correct. | Students did very well on the research/reaction/discussion papers at 95%. I formally had students do full research papers, but students had numerous challenges. However, the reaction paper assignment allowing students to investigate local and current issues and to form their own opinion is successful. | No additional changes are necessary. | No additional funding is required |
Active volcanoes on the Big Island of Hawaii give off sulfur dioxide that mixes with other gases to form moisture form of aerosol categorized as vog. The trade winds carry the vog to various places and it sits near mountains. The vog reaches several of the other islands including Oahu. Scattered light makes the vog visible to the people of Hawaii and it is a very big concern to health problems. It has been recorded that about 2,000 tons of sulfur dioxide is emitted from the Kilauea volcano for over ten years now, with big island volcanoes actively erupting, Hawaii is really taking a beating from vog every day. Vog has been seen to aggravate pre-existing respiratory problems in individuals and it should be taken very seriously.

When vog levels are high the increased sulfur dioxide emissions are very harmful to the people of Hawaii, animals and crops. Acidic aerosols found in the vog are able to sit in one’s lungs which can impair proper functioning and cause damage. I’ve met many students at WCC who have come from the Big Island and never had any initial problems with vog until they came to our island! Pretty bizarre but they all had many flu-like symptoms including, watery eyes, headaches, sore-throat, breathing difficulties or their asthma would feel ten times as worst and they could have uncontrollable coughing on very heavy vog days. The reason for this is because sulfur dioxide carries a sharp odor that actually irritates the skin and delicate tissues surrounding the eyes, nose and in the throat. According to the Big Island Index 1 ppm of sulfur dioxide can cause health problems or irritate the upper respiratory tract.

Taking pre-cautions about vog is very important because lots of fluids must be taken in and hot tea is also recommended to open up the airways in case you are one of those who feel difficulty in breathing when vog comes around. According to the Big Island Vog Index, ten pre-cautions to take when vog is present would be, to again drink lots of fluids to loosen mucous and clear lungs, don’t overexert yourself on a thick vog day, avoid high vog areas, avoid exposure to other air pollutants, avoid smoking, avoid pollen, dust, colds, flues and pollen, stay indoors, invest in an air purifier or ac, make use of respirators, and obtain baseline lung function tests to monitor your health closely with your doctor during vog seasons. Last but not least, it is always a good idea to be aware of vog conditions and to be aware of the possible health effects. Don’t ever ignore vog and think it may not have adverse effects on you because there is always a possibility that vog may impair proper functioning of your lungs and cause major problems that could hurt you in the future.

I personally take vog pretty seriously. When I moved back to Hawaii in December 2009 I started to notice that every morning when I’d be outdoors I’d be coughing uncontrollably, almost like I was about to have an asthma attack! I do have asthma but it’s very mild and I hardly ever need to take my inhaler because it is always under control. Till this day I am very congested from my throat down to my lungs and if I am very quiet I can actually hear all the mucous in my lungs with every breath I take. My
throat feels raspy and tight as if my airways are constricting. Vog has triggered my asthma and I feel it has taken a toll on my health.

Sources
http://www.noaa.gov/index.html
http://swfsc.noaa.gov/textblock.aspx?Division=AERD&id=11462&ParentMenuId=42
Professor Smith
Zoo 142
April 18, 2011

Vog in Hawaii

In the article that I read, it talks about the issues that come along with vog and why it has those affects on our bodies. To me vog is when the volcanos erupt and run into the ocean causing smoke or vog. Our wonderful trade winds blow it on over to Oahu where I have headaches, running nose, and water eyes all day, everyday. I know that many people are affected by this so I know that it has nothing to do with how healthy I am or if I am doing something wrong because everyone I know has the same symptoms.

The Big Island website that I went to talked about the different gases that can be found in the vog that happens to affect us. It says that the most toxic gases to us that is being released to us are sulfer dioxide, carbon dioxide, and hydrogen fluoride. When different parts of the earth mix, such as sulfer dioxide, oxygen, air moisture, dust and sunlight, it is called aerosol. It states that the majority of the vog is made up of sulfuric acid which is harmful to us. It also states that there are other harmful metals that reside in vog such as selenium, mercury, arsenic, and iridium.

It states that its most affective to us and sea level, which means most if not all of us. It says when the vog comes that it is best to stay indoors. If you have air condition or even an air filter, these things have been proven to be helpful as well.

I think that this article says a lot about vog here in Hawaii. It answers what
compounds are in the vog and why its causing certain affects to our body. I feel that vog is a great irritation because we don't get to see the beauty of the creation taking place but we get the junk end of the reproduction.

My mom always somehow knows when the vog is starting to set in. She gets all teary eyed and gets massive headaches. I tell her that she's just wigging out and that there isn't vog this time, but sooner than later its on the news and I have the same teary eyes and big bad headaches. On the other hand my lucky daddy never seems to be affected by it.

My dad not being affected by it and the article stating that being indoors or in air condition helps out what is happening seemed to get me thinking. My dad has three jobs and all three involves he to be indoors in air condition 90 percent of the time.

Vog is just an affect that happens after a beautiful eruption, but its a price well worth paying for the outcome and beauty that it produces in the end.
Zoo 142: Michelle Smith (T/TR)
April 13, 2011

Supersize Me!

In the movie Supersize Me, Morgan Spurlock sets out to prove how harmful fast food can be to a person’s health. The amount of people who eat fast food daily is an alarming 1 in 4 Americans. There is also a McDonald’s in almost every city that a person visits. McDonald’s represents 43% of the total U.S. fast food market. These are not good factors considering the obesity epidemic in America. Morgan decided he would show the public how much damage McDonald’s can actually do to one’s body and he began by eating McDonald’s for thirty days straight, three times a day. He could only supersize if he was asked which he did majority of the time when he was in one of the fattest states, TEXAS!

After being checked out by a team of doctors and nutritionists to document his current state of health which was considered above average, Morgan decided to begin his all-McDonald’s diet. He had a cardiologist, a general practitioner, and a gastroenterologist. They ran blood work and monitored him closely throughout his thirty day trial. Over time Morgan’s weight dramatically increased, his health weakened and he begins to show signs of depression. He began to have difficulty breathing and would get chest pains every so often. Morgan at 6 foot 2 inches, 185lbs, and 11% body fat was fit and lean at the start the month. After 30 days Morgan had gained 24.5lbs and increased his body fat by 7%. His cholesterol sky rocketed as well. These numbers were insane! All of his doctors urged him to stop the diet instantly because his organs were soon to shut down.

McDonald’s is a big contributor to the obesity epidemic in America today. They spend millions of dollars to promote food that is of very little nutritional value. The sad thing about it all is that McDonald’s targets children. They build in playgrounds in the restaurants, promote birthday parties, and put toys in happy meals to lure the younger generations in. The only way people will actually realize the kind of damage fast food is capable of is by educating people and presenting real life evidence like Morgan has done to possibly set pre-cautions for those McDonald’s binge eaters.
Diabetes Mellitus In Hawaii

Diabetes Mellitus, or type 2 diabetes, is a common disease that is raising awareness here in Hawaii. Since more than half of the adults in Hawaii are overweight or obese, this common factor leads to many people finding themselves being diagnosed with this type of diabetes. It causes many health risks and complications for people. However, because diabetes mellitus is a result of high glucose levels, there is a cure and prevention for it.

Type 2 diabetes results in many complications such as stroke, hypertension, or high blood pressure, lower limb amputation, blindness, kidney failure, dental disease, pregnancy problems, and sexual dysfunction. Because of Hawaii's increasing issues with overweight, we are also experiencing increasing percentages in Hawaii's adult population being diagnosed with diabetes type 2. According to the U.S. Centers for Disease Control and Prevention, these numbers have increased from 5 percent to 8 percent within a decade.

It is no surprise that because we have been living in a fast food society, where almost everything is fried, that the numbers for persons with overweight leading to diabetes type 2 have increased. Especially, since most people are in a rush and do not have the time or expense, since the healthy foods are not cheap, fast food is conveniently available. However, the people who are dealing with this disease the most, are the Native Hawaiians, Pacific Islanders, and Asians.
The main reason why this disease is so dangerous is because the signs and complications that this disease shows do not pose a great risk until it is too late. For example, the only way that people will finally get to the point of any major life changes is when this disease gives them a stroke or heart attack, but by then, it may be too late. The symptoms are vague and most people do not pay attention to how they are increasing their chances of death.

Another reason why this disease is affecting the people of Hawaii is because some people do not think that they are prone to get the disease. It only affects them after they go to the doctor and he/she tells the person that they need to change their lifestyle. However, people do not change so fast. It sometimes takes the risk of a heart attack, or another disease to affect them before they really start to change their unhealthy lifestyle.

Type 2 diabetes is now showing an increase not only in adults, but also in children. There is no age limit as to when this disease will hit someone, because it mostly depends on a person’s diet. Because of this, treatment for this disease is nothing too complicated. It only involves medication, a healthier diet and some exercise.

In conclusion, type 2 diabetes, or diabetes mellitus is becoming a major issue in Hawaii because of our increasing numbers of overweight and obese people. Although it can lead to major health problems, there are ways that we can treat it, and avoid it altogether. Having a healthy lifestyle and watching what we eat can help and increase our chances of avoiding this disease.