**Biochemistry Course Descriptions**

**BioMG3300 — Principles of Biochemistry: Individualized Instruction**
- Taught by Professor Jim Blankenship
- One semester course covers two semesters of biochemistry
- Can be taken for credit by students pursuing biochemistry, molecular & cellular biology concentrations as well as other majors.

**BioMG3350 — Principles of Biochemistry: Proteins, Metabolism and Molecular Biology**
- Taught by Professor J. Chris Fromme and Professor Bik Tye
- One semester course covering two semesters of biochemistry
- Cannot be taken for credit by students pursuing biochemistry, molecular & cellular biology concentrations
- Can be taken by any other biology majors for credit toward degree

---

**Conclusions & Summary**

- Most auto-tutorial students chose the course for the flexible structure, because they had a time conflict with lecture-based course, or because they were confident in their ability to teach themselves.
- Most lecture students chose the course because they admitted that they lacked self-discipline to teach themselves or had a distinct preference for learning via lecture from a knowledgeable and enthusiastic professor.
- Auto-tutorial students seemed to generally feel that they were learning the information more thoroughly because of the design of the course. They also gained confidence in their ability to teach themselves a rigorous subject.
- Most of the comments (10 out of 12) from the auto-tutorial students suggested that despite the extra effort, they did feel like they were learning and remembering more of the course content.
- Most of the students in the lecture course reported they would likely never take an auto-tutorial course.
- Compared to the lecture students, the auto-tutorial students seemed to have more of an interest in biochemistry, were more likely to take another biochemistry course, and saw improvements in their study habits.

---

**Purpose of Study & Research Questions**

I was interested in investigating the different motivations, experiences, and outcomes between students that take an auto-tutorial versus a lecture-based biochemistry course.

- What motivates students to take an auto-tutorial course or a lecture-based course?
- What do students feel like they get out of an auto-tutorial course compared to previous lecture-based courses they have taken?
- Was the learning experience within an auto-tutorial course worth the extra effort that is required of them?
- Is there only a certain kind of student than can be successful in an auto-tutorial or lecture-based course or can any student of any learning style and study habit be successful in either learning environment?

---

**Research Methods**

- Design surveys that question the motivations, interest level, and preferences for students taking BioMG3300 and BioMG3500.
- Pass out paper survey to students in review session for BioMG3300 and during class for BioMG3350.
- Email BioMG3300 students to take the survey since they do not have an official meeting time.
- Compare the responses of the two courses and determine any conclusions that can be made.
- Correlate responses with final grades (eventually).

**Auto-tutorial vs. Lecture Class Comparison**

<table>
<thead>
<tr>
<th>Questions</th>
<th>Auto-tutorial</th>
<th>Lecture</th>
<th><em>What factors did you consider in making the decision to take this course? Check ALL that apply.</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>How easy/difficult has this course been for you this semester?</td>
<td>Auto-tutorial</td>
<td>Lecture</td>
<td></td>
</tr>
<tr>
<td>How easy/difficult has this course been for you this semester?</td>
<td>Auto-tutorial</td>
<td>Lecture</td>
<td></td>
</tr>
<tr>
<td>On average, how many hours per week do you spend in class, studying, and doing work for this course?</td>
<td>Auto-tutorial</td>
<td>Lecture</td>
<td></td>
</tr>
<tr>
<td>What was your interest level in biochemistry prior to taking this course?</td>
<td>Auto-tutorial</td>
<td>Lecture</td>
<td></td>
</tr>
<tr>
<td>How likely are you to take the autotutorial version of a 4-credit natural science course while you are at Cornell?</td>
<td>Auto-tutorial</td>
<td>Lecture</td>
<td></td>
</tr>
<tr>
<td>How likely are you to take the lecture-based version of a 4-credit natural science course while you are at Cornell?</td>
<td>Auto-tutorial</td>
<td>Lecture</td>
<td></td>
</tr>
<tr>
<td>How have your study habits improved since you started taking this course?</td>
<td>Auto-tutorial</td>
<td>Lecture</td>
<td></td>
</tr>
</tbody>
</table>

**BioMG3300 Auto-tutorial Biochemistry**

<table>
<thead>
<tr>
<th>Review Session Students Surveyed</th>
<th>Surveys Emailed by Students</th>
<th>Gender of Students</th>
<th>Age Transfers?</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>15</td>
<td>10 males, 16 females</td>
<td>Mostly 19-21, one 30</td>
</tr>
</tbody>
</table>

**BioMG3500 Lecture Biochemistry**

<table>
<thead>
<tr>
<th>Review Session Students Surveyed</th>
<th>Surveys Emailed by Students</th>
<th>Gender of Students</th>
<th>Age Transfers?</th>
</tr>
</thead>
<tbody>
<tr>
<td>82</td>
<td>0</td>
<td>30 males, 52 females</td>
<td>Mostly 19-22, one 27, one 29</td>
</tr>
</tbody>
</table>

“*I can learn from a textbook whenever. I paid to come to Cornell to hear professors give lectures to help me learn*”

“*I really enjoyed Professor Fromme’s lectures and enthusiasm*”

“*Those paying ~$60,000/year should not have to ‘teach yourself’*”

---

**Why should I teach myself when I pay to go to Cornell for professors to teach me?**

*It’s a little more difficult, but it is rewarding to learn how to teach yourself.*

Carolyn L. Hale, PhD Candidate in Biochemistry, Molecular, & Cell Biology
Department of Molecular Biology and Genetics, Cornell University