Current Status of the Department of Biological Sciences:

The Department of Biological Sciences has 23 full time tenured/tenure track and one full time term faculty. This diverse group has expertise ranging from traditional applied field biology to leading edge bench biology focusing on the cell, molecular and nano-biology controlling life processes. This faculty is highly competent with many being funded by NSF, NIH, and/or National Geographic sources. Currently, tenure is held by 69.5% of the faculty. There are currently 11 (47.8%) professors, 5 (21.7%) associate professors, 7 (30.4%) assistant professors and 1 assistant professor holding a term position.

Approximately 80% of the faculty attend regional or national meetings yearly with funding for that travel supplied by their research grants and internal funding from the College of Science.

Over the past 2 years the Department has undergone an introspective review and as a result we first reconfigured the construct of our majors so to provide students with current content in an affordable offering. We combined the Biomedical Science (18*) and the Cellular/Molecular Biology (9*) majors into the single more streamlined Cell, Molecular and Medical Biology. Furthermore, we offered coursework in 4 different majors: Biological Science (345*); Cell, Molecular and Medical Biology (42*); Ecology and Evolutionary Biology (15*); Microbiology (10*). Each major provides introductory core foundations of biology and is tailored to allow the students to specialize with upper level coursework. However, with more internal discussion and review of responses from external graduate and professional programs, the Department has collapsed all majors and areas of emphasis into a single Biological Sciences major. This will streamline the students’ paths for success and will allow advisors to more effectively guide all of our students to fruitful uses of the MU degree. (*Number of students remaining to graduate in the closing major for Spring 2014)(*Number of students registered in each current major for Spring 2014)
Our coursework affords our students with the ability to think critically, apply knowledge to new situations and to formulate new ideas to solve emerging problems. A major goal in the Department is to involve undergraduates in “real” research opportunities. These students often become valuable team research team members and are often included as authors on peer-reviewed research papers. With this background, our students, who are trained to be life-long learners, will be able to successfully compete in professional school, advanced study (MS or PhD) programs, and enter the workforce directly using their biology training or other careers where they must use their abilities to think creatively and problem solve.

Table1: Assessment point courses enrollments for the last 5 years.

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<tr>
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</thead>
<tbody>
<tr>
<td>120</td>
<td>356/130/0</td>
<td>366/133/0</td>
<td>340/130/0</td>
<td>320/120/0</td>
<td>327/141/0</td>
<td>1709/654/0</td>
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<tr>
<td>320</td>
<td>44/13/19</td>
<td>44/21/0</td>
<td>45/40/15</td>
<td>47/22/11</td>
<td>46/41/0</td>
<td>226/137/45</td>
</tr>
<tr>
<td>322</td>
<td>57/47/14</td>
<td>63/71/19</td>
<td>61/52/8</td>
<td>60/58/10</td>
<td>56/51/0</td>
<td>297/279/51</td>
</tr>
<tr>
<td>324</td>
<td>70/66/8</td>
<td>64/35/13</td>
<td>46/74/13</td>
<td>62/52/8</td>
<td>45/42/0</td>
<td>287/269/42</td>
</tr>
<tr>
<td>491</td>
<td>27/27/2</td>
<td>40/46/2</td>
<td>28/46/2</td>
<td>35/39/1</td>
<td>38/35/0</td>
<td>168/193/7</td>
</tr>
</tbody>
</table>

The curriculum offered in the Department of Biological Sciences aligns very well with the University’s Domains of Critical Thinking and the Learning Outcomes based upon these domains. For example, the University expects that within Communication Fluency (Domain); Students will develop cohesive oral, written and visual communications tailored to a specific audience. As indicated above, at all levels, BSC students are mentored and are expected to master the skills of communication at various levels, _ie_ informal discussions among peers and more formal oral presentations to an audience including faculty. With the Domain of Quantitative Thinking; Students will analyze real-world problems quantitatively, formulate plausible estimates, assess the validity of visual representation of quantitative information and differentiate valid from questionable statistical conclusions. This IS the essence of scientific thought and the core of how students in the BSC curriculum are educated.
Table 2: Assessment point courses: All BSC majors vs total enrollments for 2015/2016 AY

<table>
<thead>
<tr>
<th>Course</th>
<th>Fall 2015</th>
<th>Spring 2016 AY</th>
<th>Totals</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Major/total</td>
<td>Major/total</td>
<td></td>
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<tr>
<td>120</td>
<td>160/327</td>
<td>49/141</td>
<td>209/428</td>
</tr>
<tr>
<td>320</td>
<td>41/46</td>
<td>34/41</td>
<td>75/87</td>
</tr>
<tr>
<td>322</td>
<td>41/56</td>
<td>42/51</td>
<td>83/107</td>
</tr>
<tr>
<td>324</td>
<td>30/45</td>
<td>30/42</td>
<td>60/87</td>
</tr>
<tr>
<td>491</td>
<td>38</td>
<td>35</td>
<td>73</td>
</tr>
</tbody>
</table>

One point to emphasize from the data expressed in Table 2 is that in addition to serving the BSC majors with these assessment point courses, the Department of Biological Sciences serves many other departments’ students with these high quality courses. These “other” departments include: Psychology, Mechanical Engineering, Athletic Training and Chemistry to name just a few. This service component of these “majors” classes demonstrates the importance of the material/content delivered here to the general education of the STEM community of scholars and students at Marshall.

It became painfully evident that 1. the Chairman of the Department did not have the time to do the necessary assessment tasks alone. This job requires routine time commitments and task completion that were beyond the time capability of one person. 2. Even with their best intentions in mind, if faculty are not given clear tasks to accomplish for the assessment effort, they will put off the tasks as long as possible. As a result of this “epiphany”, I have created the BSC Assessment Team to better manage the important tasks of program assessment. The BSC Assessment Team consists of Dr. Wendy Trzyna, Dr. Ann Axel, Dr. Frank Gilliam and the Chairman of the Biology department. This team will divide the tasks into manageable “chunks”. Dr. Trzyna will assume the responsibility of collecting and analyzing the information from the BSC 120 classes. Dr. Axel will coordinate the data collection/management from the BSC “core” courses, Dr. Gilliam will collect the information from the Capstone Experience and collate
the information collected with the mandatory survey and the Chairman of the Department will coordinate
the final report for filing with Dr. Mary Beth Reynolds and the Assessment Office.

All students majoring in Biology will take BSC 120 (Principles of Biology) or a course approved to
substitute for BSC 120 if they have 1. advanced study credits or 2. transferred in from another institution.
Additionally, all students majoring in Biology will take some combination of BSC 320 (Principles of
Ecology), BSC 322 (Principles of Cell Biology), and/or BSC 324 (Principles of Genetics), or a course
approved to substitute for these if they have transferred in from another institution. Finally, all students
majoring in Biology will take BSC 491 (Capstone Experience) prior to graduation. These courses give
the assessment team 3 important time points to evaluate student learning 1. BSC 120 will allow the team
to assess the incoming students’ ability to tackle an entry level college course covering the major points
of what a Biology major will be expected to know upon graduation. This will give the assessment team a
starting point from which to make conclusion as to the effectiveness of the coursework and advising effort
provided by the Department. The second level of assessment will occur at the “300 level” courses. These
courses represent what is called the core courses of the Biology degree. While all students will not take
all 3 core courses, all will take a combination of 2 or 3 of these courses. This will allow the assessment
team to evaluate the students as they begin to focus their courses choices more closely with their final
direction in the department. These core courses will allow the assessment team to make conclusions of
the effectiveness of the Department to provide opportunities for those students tending to further study at
professional schools as well as those who choose to attend graduate school or take a job in some area of
biology. Finally, the last assessment point is the Capstone Experience. In the Department of Biological
Sciences, the Capstone can be fulfilled by 1. doing a traditional research “senior thesis” with an approved
faculty member or scientist in the field of study, or 2. doing a “shadowing” of a professional clinical
mentor. The research students are required to participate in a meaningful manner on the research project.
Most will have some form of presentation, such as the Sigma Xi research day on campus, the
Undergraduate Research Day at the WV capital, or some may present the data at a scientific meeting of
the mentor’s choice. The shadowing events usually occur with a physician, dentist, veterinarian, nurse practitioner, physical therapist or other clinical expert. The students must complete a minimum of 90 hours with the mentor and the mentor then completes a Department furnished evaluation form. The students are expected to submit a final paper describing their shadowing event and explaining how this experience has affected their pursuit of the career.

By analyzing the data provided at these 3 assessment points, we will be able to follow students’ progress through the program. Retention and the time it takes for students to complete the degree requirements will be measured. By analyzing these data over time, we will be able to assess the long term effectiveness of the coursework. This truly will be an analysis of the program effectiveness as the faculty will rotate through the courses, with none being taught by the same person at every offering.
Survey of all BSC 491 Capstone Students.

This survey is intended for Internal Assessment Use Only. All data will be anonymous.

1. What is your current GPA?
2. How many semesters have you been at Marshall?
3. IF you are a transfer student, what was your previous institution(s)?
4. Have you applied to Medical, Dental, Veterinary, Physical Therapy, or other professional schools? If yes, which ones?
5. Have you been accepted to a professional school for further education?
6. Have you applied for advanced graduate work (not a professional school)? IF yes, what field?
7. Have you been accepted for advanced graduate work? If yes, what school(s)?
8. Have you applied for employment following graduation? If yes, in what field will you be employed.
9. Please provide a telephone number, email address or social media contact so we may interact with you in the future.