Overview

The report that follows presents the assessment activities, results, and action plans for the Department of Psychology – Neuroscience Program at the University of Wisconsin-River Falls. Our mission is to (1) provide students with an understanding of the content and methods of neuroscience, (2) prepare students for a lifetime of learning and thinking by cultivating intellectual and communications skills, and (3) promote personal characteristics that are consistent with high ethical and professional standards. We strive to acquaint students with research findings and theories in numerous areas across neuroscience, psychology, biology, and chemistry. This goal is accomplished through a curricular structure that ensures students first take courses in introductory neuroscience and scientific methodology followed up by courses in the foundations of psychology, biology and chemistry. We also encourage our students to further their scientific understanding by conducting independent research under the supervision of one or more faculty mentors. Our department recognizes that many students are seeking careers in health and human services and other applied fields, so we encourage practical learning opportunities including internships.

One primary factor affecting assessment and learning in our program is faculty staffing. In particular, we currently have over fifty majors with just two faculty. Given that one faculty member serves as the Program Coordinator, with a .25 release, that leaves us with only 1.75 FTE allocated to the program. Our low level of overall staffing creates tremendous demands on course scheduling and affects the availability of courses for our majors, especially given that both Neuroscience faculty members must also teach in support of the Psychology major. Similarly, with our current staffing, the advising loads and research obligations associated with the program impede our efforts to optimize our curriculum, students’ learning experiences and our assessment practices. Virtually every area of improvement we will identify in this report is significantly constrained by our staffing. In addition to the issues with staffing in the Neuroscience program specifically, the Psychology Department as a whole is down one FTE due to a recent retirement that has not been replaced. Finally, it is important to note that one of the two NSCI faculty members is new this year. Thus, the accomplishments listed in the time period of this report were carried out primarily by a single faculty member.
I. Assessment Activities

a. External program accreditation: There are no external accreditors for undergraduate programs in neuroscience.

b. Dates of assessment cycle: The Neuroscience program was informally launched in fall 2016, with formal start date of fall 2017. Our assessment practices were approved in spring of 2018. Thus, as our first report, this will focus primarily on the 2017-2018 academic year.

c. Program learning outcomes (LOs):

LO1: Knowledge Base of Neuroscience – A graduate will be able to demonstrate an understanding of basic neuroanatomy and nervous system function on a molecular, cellular and systems level. They will also demonstrate an understanding of the main research approaches, techniques and topics in neuroscience and understand the interdisciplinary nature of neuroscience.

LO2: Scientific Inquiry and Critical Thinking - A graduate will be able to use scientific reasoning to interpret phenomena in neuroscience, demonstrate information literacy and interpret, design and conduct basic research in neuroscience.

LO3: Ethical and Social Responsibility in a Diverse World - A graduate will demonstrate an understanding of the relationship between neuroscience and society, including an evaluation of ethical implications in neuroscience research.

LO4: Communication - A graduate will be able to demonstrate effective writing and presentation skills.

LO5: Professional Development - A graduate will apply neuroscience content and skills to career goals.

Each learning outcome was assessed throughout the entire assessment cycle. Specific information on where learning outcomes are achieved, how learning outcomes were assessed and when each assessment was conducted is presented below.

d. Engagement with internal stakeholders: The Neuroscience Program considers its primary internal stakeholders to be our students (majors and minors), our faculty (including tenure-track and IAS) and departments/units with which we closely collaborate (e.g., Biology, Chemistry, URSCA). As will be detailed later in the report, we collect extensive data from our students that we use in our ongoing assessment and curricular development. Our faculty participate in all phases of the assessment process, including assessment development, data collection, data analysis and evidence-based changes to our curricular and other departmental
processes. Thus, our learning outcomes and assessment practices reflect careful consideration of the needs and capacities of our internal stakeholders.

e. **Engagement with external stakeholders:** The Neuroscience Program considers its primary external stakeholders to be our alumni, organizations that employ and welcome our students as interns and graduate schools that accept and further train our students. We also recognize our obligations and connections to the field of neuroscience as a whole, to our regional and state communities and to the families who send us the students that we educate. We maintain close contact with our alumni, welcoming them at a number of annual department events. We connect with students’ families on Falcon Preview Days, at prospective student visits, and at departmental events where we encourage students to bring their families. We also interact regularly with UWRF Career Services to informally gather their observations of our students’ readiness for internships and jobs.

Regarding our connection to the field as a whole, the learning outcomes reflect the Faculty for Undergraduate Neuroscience (FUN) core competencies for an undergraduate neuroscience program published in 2012.


Our program was designed with maximum flexibility in mind, such that our students can complete the neuroscience degree in a curricular structure that also allows them to have met most of the prerequisites to enter pre-professional programs such as pharmacology, medicine and occupational therapy.


Thus, our learning outcomes and assessment practices reflect careful consideration of the needs and capacities of our external stakeholders.

f. **Assessment activities related to out-of-classroom experiences:** Out of classroom experiences relevant to our learning outcomes and assessment practices include:

- **Research Experiences:** All students complete at least one research experience as part of our Research Methods course. In addition to that, we strongly encourage our students to conduct collaborative research with our faculty members. Both of our faculty members are available to supervise students and the students may work in groups on research projects. These
experiences have been noted as especially valuable by FUN as well as by graduate programs in neuroscience and are tied to LOs 1-5.

- **Internships**: Although we are still in the early stages of developing internship-related partnerships, we expect that students will have the opportunity to complete internship credits through a variety of agencies where they gain hands-on experience in the field of neuroscience. These experiences are particularly relevant to LOs 3-5.

- **Teaching/Lab Assistantships**: Students have the opportunity to serve as a teaching/lab assistant to the Introduction to Neuroscience course. The students receive independent study credit for their work. This experience allows them the opportunity to more deeply learn the course concepts as well as to practice assisting other students and communicating with both students and professors. LOs 1, 3, 4, 5

Specific practices for assessing our learning outcomes in out-of-classroom experiences are presented in Section II below.

g. **Linkage of Learning Outcomes to UWRF Strategic Goals and Initiatives**: We believe our learning outcomes are strongly related to UWRF Strategic Goals and Initiatives. The section below more clearly summarizes the linkages.

- **Distinctive Academic Excellence**: The Neuroscience Major at UWRF is distinctive in a number of respects. First, our curriculum follows a science-based, science-first strategy aligned with core competency findings of the FUN professional group (Identifying and using ‘Core Competencies’ to Help Design and Assess Undergraduate Neuroscience Curricula, 2012; LO1 and LO2). Second, our students take foundational courses in multiple disciplines, namely psychology, biology and chemistry. Our program was the first comprehensive neuroscience degree at the undergraduate level in the UW-System. As discussed earlier, our students have significant opportunity to be actively engaged in research, keeping with the 2012-2013 Strategic Initiative focused on Undergraduate Research, Creative and Scholarly Activity (URSCA). In addition to our emphasis on scientific skills, students strengthen their Knowledge Base in Neuroscience (LO1) as well as their Communication Skills (LO4) as they advance through the curriculum. Ethical and Social Responsibility Skills (LO3) should be especially strengthened as part of the Research Methods course (PSYC 216) and Bioethics (PHIL 220). Professional Development Skills (LO5) are especially strengthened as part of their career exploration in the Introduction to Neuroscience Course.

- **Innovation and Partnerships**: As discussed previously, we are working to build internship opportunities, field-based educational experiences, and alumni partnerships. Adding additional faculty will allow us to increase
these opportunities. While much of our assessment of these practices is informal, we do formally assess student benefits from internship experiences in our Senior Exit Survey. Our expectation is that all these experiences are especially helpful to students in the development of LOs 3-5.

h. Because this is the first report, there are no previous action items on which to report.

II. Assessment Activity Results

Profile of Where Learning Outcomes are Achieved and Direct Assessment Activities for Classroom Experiences

LO1: Knowledge Base of Neuroscience: Students should gain a strong knowledge base in neuroscience through the following courses:

1) Our Introductory Courses:

   NSCI 111: Introduction to Neuroscience
   PSYC 101: General Psychology
   BIOL 150: General Biology
   CHEM (varies): One introductory Chemistry Course

2) Our Core Courses:

   BIOL 342: Anatomy and Physiology II (focus on the nervous system)
   BIOL 356: Neurobiology
   PSYC 350: Sensation and Perception
   PSYC 355: Physiological Psychology

LO1 is assessed directly using exam items from our first-year majors-only section of NSCI 111: Introduction to Neuroscience and PSYC 355: Physiological Psychology, which is taken by non-first-year students. Thus, we have approximations of both baseline content knowledge and content knowledge after additional coursework has been completed. For this report, data will be presented for the 2017-2018 academic year. We will provide comparisons using first-year student data from the fall 2017 Introduction to Neuroscience Majors-Only section and the fall 2017 and spring 2018 Physiological Psychology sections.

LO2 (Scientific Inquiry), LO3 (Ethical and Social Responsibility), LO4 (Communication) and LO5 (Professional Development):

It is expected that most of our coursework also allows for the introduction and practice of LOs 2-5. However, three specific courses have been identified as providing unique opportunities to demonstrate and enhance these LOs. The table
below presents direct assessment activities for LOs 2-5 for three courses, NSCI 111: Introduction to Neuroscience, PSYC 216: Research Methods, and PSYC 355: Physiological Psychology. Information about the specific assessment indicators is presented below the table.

<table>
<thead>
<tr>
<th>Course/LO</th>
<th>LO2: Scientific Inquiry</th>
<th>LO3: Ethical and Social Responsibility</th>
<th>LO4: Communication</th>
<th>LO5: Professional Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSCI 111 Introduction to Neuroscience</td>
<td>Lab Assessments</td>
<td>Exams</td>
<td>Research Papers</td>
<td>Career Aspiration Assignment</td>
</tr>
<tr>
<td></td>
<td>Research Papers</td>
<td></td>
<td>Lab Reports</td>
<td></td>
</tr>
<tr>
<td>PSYC 355 Physiological Psychology</td>
<td>Lab Assessment</td>
<td></td>
<td>Research Papers</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Presentations</td>
<td></td>
</tr>
</tbody>
</table>

*Career Aspiration Assignment Rubric:* This assignment is completed in NSCI 111: Introduction to Neuroscience and is designed to allow students to become immersed in an area or areas of neuroscience that they could see themselves doing in the future. This paper is tailored to start academic exploration of neuroscience careers early. The rubric is presented in the Appendix, was developed by the course instructors, and is designed to assess LO5: Professional Development. Scores in the rubric can range from 0-60, with higher scores representing higher levels of LO5. For the purpose of comparison with other direct assessments, we present the scores as percentages of the total possible.

*Research Papers and Lab Reports Rubric:* These assignments are completed by all students in NSCI 111: Introduction to Neuroscience and PSYC 355: Physiological Psychology. In NSCI 111, students have to work together to complete an experiment in both neuropsychopharmacology and neurogenetics, understand basic scientific methodology, and communicate their findings clearly in lab reports. The rubric is presented in the Appendix, was developed by the course instructors, and is designed to assess LO2: Scientific Inquiry and LO4: Communication. Scores on the rubric can range from 0-50, with higher scores representing higher levels of LOs 2 and 4. For the purpose of comparison with other direct assessments, we present the scores as percentages of the total possible. In PSYC 355, students choose a relevant topic in neuroplasticity that is of interest. Students have to read critically and synthesize data and theory presented in scholarly works; and develop skills in organizing and writing information. Through this work, they are able to demonstrate their understanding and mastery of the importance of evidence in neuroscience, scientific methodology related to neuroscience, and written communication skills. The rubric is presented in
the Appendix, was developed by the course instructors, and is designed to assess LO2: Scientific Inquiry and LO4: Communication. Scores on the rubric can range from 0-100, with higher scores representing higher levels of LOs 2 and 4. Thus, the scores can be interpreted as percentages of the total possible.

Presentation Rubric: This assignment is completed in PSYC 355: Physiological Psychology. As part of this assignment, students work in groups to present information on an assigned neurotransmitter. Through this work, they are able to demonstrate their understanding of the importance of evidence in neuroscience, demonstrate oral communication skills and work with others to complete the project. The rubric is presented in the Appendix, was developed by the course instructor, and is designed to assess LO2: Scientific Inquiry and LO4: Communication. Scores on the rubric can range from 0-50, with higher scores representing higher levels of LOs 2, 4. For the purpose of comparison with other direct assessments, we present the scores as percentages of the total possible.

a. Results from Direct Assessment Activities for Classroom Experiences

Exam Item Results Assessing LO1: Knowledge Base of Neuroscience

The table below presents assessment results for first-year students from the fall 2017 Introduction to Neuroscience Majors-Only section and the fall 2017 and spring 2018 Physiological Psychology sections. These are not exact comparisons, because students enter and leave the major throughout their academic careers. However, the data provide a rough comparison of baseline knowledge and knowledge after additional coursework has been completed.

Summary of Exam Item Results

<table>
<thead>
<tr>
<th>Content Area</th>
<th>First-Year Students</th>
<th>Non-First-Year Students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F17</td>
<td>F17</td>
</tr>
<tr>
<td># Items</td>
<td>200</td>
<td>180</td>
</tr>
<tr>
<td>Neuroscience Foundations Knowledge Base</td>
<td>68.48%</td>
<td>80.44%</td>
</tr>
</tbody>
</table>

Note: Ns for the First-Year Student cell is 12, while those for the Non-First-Year Students cells are 3 for F17 and 5 for S18.
As seen in the table, students are making substantial gains in the Neuroscience Foundations Knowledge Base. The discrepancy between the first-year student and non-first year student scores likely represents the fact that all students take additional courses in the Knowledge Base area. We are focused on the gains from the first-year to subsequent years rather than the raw percentages for each group. The significance of the findings to our program is that students do appear to be acquiring substantial knowledge in neuroscience foundations of the field, thus supporting progress in LO1. Because this is our first assessment report, we recognize that the trend data are based on small samples and are thus difficult to reliably interpret.

Career Aspiration Assignment Rubric Results Assessing LO5: Professional Development

Scores for the Career Aspiration Assignments using the previously discussed rubric are presented in the table below.

Summary of Career Aspiration Assignment Rubric Scores

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017-2018</td>
<td>11</td>
<td>80%</td>
<td>100%</td>
<td>89.40%</td>
</tr>
</tbody>
</table>

Thus students, on average, are performing well on this direct assessment of LO5: Professional Development. That is, they are identifying proposed career areas, researching those areas, and developing action plans to prepare them for those careers. Because of the sort cycle of the report, we do not have trend data to report for this assessment.

Research Papers and Lab Reports Rubric Results Assessing LO2: Scientific Inquiry and LO4: Communication

Scores for the Research Papers and Lab Reports using the previously discussed rubric are presented in the table below.
Summary of Research Papers and Lab Reports Assignment Rubric Scores

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
<th>2017 – 2018 Academic Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td>Neuropsychopharmacology</td>
<td>11</td>
</tr>
<tr>
<td>Neurogenetics</td>
<td>11</td>
</tr>
<tr>
<td>Neuroplasticity</td>
<td>53</td>
</tr>
</tbody>
</table>

As seen in the table, students are performing well on this direct assessment of LO2: Scientific Inquiry and LO4: Communication. As with many programs, we struggle with our students’ foundational writing skills. One thing we hope will help here is that the English Department has been offering discipline-linked sections of both English 100 and 200. This should help hone our students’ ability to write in the discipline of neuroscience.

Presentation Rubric Results Assessing LO2: Scientific Inquiry and LO4: Communication

Scores for the Presentation Rubric are presented in the table below.

Summary of Presentation Rubric Scores

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
<th>Academic Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td>2017-2018</td>
<td>25</td>
</tr>
</tbody>
</table>

As depicted in the table, our students are generally doing well on this direct assessment of LO2: Scientific Inquiry and LO4: Communication.
b. Results from Assessments of Out-of-Classroom Activities

Results related to Research Experiences

As mentioned previously, research experiences are expected to impact all learning outcomes for our students. All students get research experience through completing research projects in NSCI 111: Introduction to Neuroscience. We encourage students to participate in additional research experiences that are supervised by our faculty members. These experiences are assessed via annual data collection of both the number of students completing these experiences and the number of presentations of their work (thus, ensuring they completed the projects and submitted them to the review process). Students also share their experiences on a Post-Experience Survey for Research Experiences (included in the Appendix).

For 2017-2018, 15 students conducted research studies, resulting in 6 students presenting at local (e.g., UWRF Fall Gala), regional (e.g., Midbrains, WiSys) and international (e.g., SFN) venues.

Results from the Post-Experience Survey for Research Experiences are presented in the table below with selected items presented that represent the five LOs we believe occur through research experiences. Items are presented on a 6-point scale ranging from 1=Strongly Disagree to 6=Strongly Agree.

Summary of Post-Experience Survey Results for Research Experiences

<table>
<thead>
<tr>
<th>Outcome</th>
<th>2017-18</th>
</tr>
</thead>
<tbody>
<tr>
<td>LO1 Knowledge Base of Neuroscience</td>
<td>N=3</td>
</tr>
<tr>
<td>Helped me develop familiarity with concepts, principles and themes in neuroscience.</td>
<td>6.00</td>
</tr>
<tr>
<td>LO2 Scientific Inquiry and Critical Thinking</td>
<td></td>
</tr>
<tr>
<td>Helped me understand scientific reasoning, demonstrate information literacy, and interpret, design and conduct basic research in neuroscience.</td>
<td>6.00</td>
</tr>
<tr>
<td>LO3 Ethical and Social Responsibility</td>
<td></td>
</tr>
<tr>
<td>Helped me apply ethical standards to evaluating neuroscience and practice.</td>
<td>6.00</td>
</tr>
<tr>
<td>LO4 Communication</td>
<td></td>
</tr>
<tr>
<td>Helped me to develop skills in effective writing and presenting.</td>
<td>6.00</td>
</tr>
</tbody>
</table>
As depicted in the table, our indirect assessment through the post-experience survey shows students strongly feel the experiences benefited them in all the LOs. Because of the short cycle for this report, we are not able to identify trends in student research experience using the current data. However, the current data are positive.

**Results related to Teaching/Lab Assistantships**

Teaching/Lab Assistantships are expected to be most strongly linked to LO3: Ethical and Social Responsibility, LO4: Communication and LO5: Professional Development. For 2017-2018, 1 student completed a teaching/lab assistantship.

Results from the Post-Experience Survey for Teaching/Lab Assistantships are presented in the table below with selected items presented that represent the four LOs we believe are primarily related. Items are presented on a 6-point scale ranging from 1=Strongly Disagree to 6=Strongly Agree.

**Summary of Post-Experience Survey Results for Teaching/Lab Assistantships**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>LO3</th>
<th>LO4</th>
<th>LO5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethical and Social</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Responsibility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helped me apply ethical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>standards to evaluating</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>neuroscience and practice.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helped me to develop</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>skills in effective</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>writing and presenting.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional Development</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helped me apply</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>neuroscience content</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>and skills to my</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>graduate school and/or</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>career goals.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Recognizing that the sample size is very small, the data do suggest that students completing teaching/lab assistantships feel the experiences are benefiting them in the LO areas. The short cycle for this report makes it impossible to present trend data for teaching/lab assistantship experiences.
c. *Indirect Assessment Results Not Already Discussed and their Significance to the Program*

*Senior Exit Survey Description, Linkages to Learning Outcomes, and Results*

We administer a comprehensive Senior Exit Survey to senior students. The full survey is included in the Appendix. Data here were compiled from 2017-2018 and represent 4 respondents.

There are items or sections in the Senior Exit Survey dealing with (1) general attitudes/perceptions about student experiences in the department, (2) perceptions of learning across major content areas in our curriculum [related to LO1: Knowledge Base of Neuroscience] and (3) perceptions of skill development for important areas related to LO2: Scientific Inquiry, LO3: Ethical and Social Responsibility, LO4: Communication and LO5: Professional Development.

Results of our Senior Exit Survey related to overall satisfaction with the program are presented below. As depicted in the figure, students were very satisfied with both the quality of their education and the quality of their academic advising in the department. They also strongly agreed that they would major in neuroscience again, given the choice.

![Overall Satisfaction with the Program](image)
Results of our Senior Exit Survey related to LO2: Scientific Inquiry are presented below. Students generally felt that their experiences in the program helped develop their skills in key practices related to scientific inquiry. Student confidence in their ability to interpret statistical results was lower than for the other areas. As will be discussed in Section III, we are engaged in ongoing efforts to consider our quantitative course content and sequencing.

![LO2: Scientific Inquiry](image)

Results of our Senior Exit Survey related to LO3: Ethical and Social Responsibility are presented below. Students felt that their experiences in the department helped develop understanding and skills related to this learning outcome.

![LO3: Ethical and Social Responsibility](image)
Results of our Senior Exit Survey related to LO4: Communication are presented below. Students felt that their experiences in the department helped develop their skills in both oral and written communication.

Results of our Senior Exit Survey related to LO5: Professional Development are presented below. Students generally felt that their experiences in the department helped develop both teamwork skills and their ability to assess their talents and career options. They were also generally satisfied with the information they received about graduate school and career options. However, their satisfaction in these areas was not as strong as for most other areas of the data. This is an ongoing concern and something we are trying to address in both curricular and co-curricular activities that will be discussed in Section III of the report.

In summary, the quantitative data from the exit survey support significant achievement in our key learning outcomes. We have a few areas of concern, but we
are working to address those. In all, students seem very satisfied with the program and the knowledge and skills they develop in our program.

In addition to the quantitative data, we also collect qualitative feedback using the Senior Exit Survey about curricular or programmatic suggestions for improvement. There are three key themes we have identified in that data. First, consistent with the quantitative data, students indicate that they want more information and assistance regarding career and graduate school planning (related to LO5: Professional Development). Second, students indicate that they want more quantitative and research methods coursework along with additional research opportunities (related to LO2: Scientific Inquiry). Finally, students indicate that they want more opportunities for building social and professional relationships with their student peers and faculty members. We will address all three concerns in Section III of the report.

d. **Indirect Alumni Assessment Results**

The only alumni data we currently have access to reflect the current employment and educational status of recent graduates. We report below using data from 2016-2017 and 2017-2018.

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>N</th>
<th>% Employed</th>
<th>% Continuing Education</th>
<th>% Employed or Continuing Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016-2017</td>
<td>3</td>
<td>33%</td>
<td>67%</td>
<td>100%</td>
</tr>
<tr>
<td>2017-2018</td>
<td>5</td>
<td>60%</td>
<td>20%</td>
<td>80%</td>
</tr>
</tbody>
</table>

As seen in the table, our two-year average for students who are either employed or pursuing additional education is roughly 90%. Currently, 38% of our graduates are in Ph.D programs. In Section III, we will address actions regarding strengthening our alumni assessment processes.

e. **Indirect Professional Assessment Results**

We do not currently have a process in place for formal assessment of professionals who have direct contact with our students and alumni. Informally, we have feedback that our graduates are well prepared in all learning outcomes. In Section III of the report, we will discuss plans to strengthen our professional assessment practices.
III. Action Plans

a. Discussion of Where/How our Performance is/is not Meeting our Expectations

Overall, we are very pleased with our assessment results. Given the significant resource demands (both financial and staffing-related) we are currently facing, our results are encouraging. As seen in the Senior Exit Survey data, students are very satisfied with our teaching and advising, and a considerable majority would choose our major again.

Considerations by learning outcome are presented below.

LO1: Knowledge Base of Neuroscience

Based on the Exam Item data (direct assessment), as well as the Post-Experiences Survey for Research Experiences and the Senior Exit Survey data (indirect assessments), we are confident that students are developing a strong knowledge base in neuroscience. Obviously, we also directly assess foundational knowledge in all our courses and are satisfied with the results there.

LO2: Scientific Inquiry

Based on the data from the Presentation Rubric (direct assessment) as well the Senior Exit Survey (indirect assessments) we feel strongly that our students are developing substantial skills in scientific inquiry. That being said, we recognize room for improvement and want to be responsive to the qualitative feedback indicating that our students desire more quantitative and research experience. In Section IIIb below, we will discuss actions to improve this learning outcome for our students.

LO3: Ethical and Social Responsibility

We assess LO3 directly through the Presentation Rubric. We assess LO3 indirectly through the Post-Experience Surveys for Research, Teaching/Lab Assistantships, as well as through items on the Senior Exit Survey. All data for this learning outcome consistently suggest that students are developing ethical and social responsibility through their experiences in our program.

LO4: Communication

We assess LO4 directly through the Research Papers and Lab Report Assignments. We assess LO4 indirectly through the Post-Experience Surveys for Research, Teaching/Lab Assistantships, as well as through items on the Senior Exit Survey. All data for this learning outcome consistently suggest that students are developing both oral and written communication skills through their experiences in our program.
LO5: Professional Development

We assess LO5 directly through the Career Aspiration Assignment Rubric. We assess LO5 indirectly through the Post-Experience Surveys for Research, Teaching/Lab Assistantships, as well as through items on the Senior Exit Survey. LO5 is also related to the indirect assessment data from our alumni on their employment and educational status. Our data for this learning outcome generally suggest that students are developing professionally through their experiences in our program. That being said, some of the data from our Senior Exit Survey suggests that students feel weaker in this area compared to other learning outcomes and desire more information and assistance around career and graduate school preparation. In Sections IIIb and IIIc below, we will discuss potential changes to address this.

b. Discussion of actions the Neuroscience Program will take to maintain/improve Learning Outcome Performance (In-Class/Curricular Activities)

Proposed or in-progress actions by learning outcome are presented below. Timelines and accountability assignments are presented in IIIh.

LO2: Scientific Inquiry

We are considering curricular revisions to our current statistics/research methods sequence that might integrate more skill development into the course practices. In IIIc below, we will discuss out of classroom practices for further developing skills related to this learning outcome.

LO3: Ethical and Social Responsibility

We see no current need to enhance activity related to this learning outcome.

LO4: Communication

We see no current need to enhance activity related to this learning outcome. However, as discussed previously, we will continue to work with the English department to allow Neuroscience majors access to discipline-specific sections of ENGL 100 and 200. We believe this integrative approach to their coursework will help students develop skills related to this learning outcome.

LO5: Professional Development

In terms of in-course activities, we are considering adding additional career content to our NSCI 111: Introduction to Neuroscience course that we feel will help our students with professional development.
c. Discussion of Actions the Neuroscience Program will take to Maintain/Improve Out-of-Classroom Learning Experiences

Related to our concerns about LO5: Professional Development and to our Senior Exit Survey data suggesting students want more opportunities to be connected with one another, we have a new Peer Mentoring program in the Psychology Department. A select group of high-achieving Psychology and/or Neuroscience majors are enrolled in a special topics course that trains them on issues related to mentoring college students. Each mentor is assigned to a mentoring team with other mentors who complement their experiences, academic skills and interpersonal styles. Each student in our freshman cohort is assigned to both an individual peer mentor and to a mentoring team. The mentors are required to hold office hours, maintain contact with their mentees, develop proposals for evidence-based projects we can do to increase retention, share academic and other information with their mentees and other such tasks.

As discussed previously, the primary out-of-classroom experiences we focus on in the department assessments are research experiences, internships, and teaching/lab assistantships. While we have some plans and practices in place to improve in these areas, we wish to note that the previously mentioned staffing levels seriously inhibit progress. Our faculty are currently stretched very thin in terms of additional research mentoring, internship supervision, or international program development and participation. That being said, we do have some actions in place that should improve these experiences for students.

Research Experiences: We are actively pursuing interdisciplinary collaborations with other departments (e.g., Computer Science and Information, Communication Sciences and Disorders) that should provide our students with access to new research topics, laboratory space, equipment and cross-discipline faculty mentorship. Several faculty members from these departments have expressed interest in active collaboration. We are very excited about these possibilities.

Internships: We are finding it very difficult to imagine expanding much beyond what we are currently doing. We do have improvements to our internship processes on our long-term agenda. However, for now, we will work with CAS colleagues to advocate for a CAS Internships Office/Coordinator to bring us more in line with what other colleges have available. Once we have additional staffing, our plan is to assign a faculty member to coordinate internships for the program.
d. *Discussion of Actions the Neuroscience Program will take to Maintain or Improve Indirect Student Assessment*

Our primary indirect assessments are (1) the Post-Experience Surveys for Research Experiences and Teaching/Lab Assistantships, (2) the Senior Exit Survey and (3) our snapshot data of counts for various activities (e.g., student research presentations). We are satisfied with the quality of the data for the Post-Experience Surveys, but our completion rates for them can be improved. Our current method of administration is to send out email invitations and have students complete them via Qualtrics. We need to either follow up with students to ensure they complete them or develop an alternative process for administration.

e. *Discussion of Actions the Neuroscience Program will take to Maintain or Improve Indirect Alumni Assessment*

The UWRF Survey Research Center stopped collecting student reaction data in the 2011-2012 academic year and now only report data on student employment and educational status in their reports. Research suggests that reaction data collected after people have had the opportunity to apply trained skills in their careers or future education greatly enhance data collected immediately after graduation. As such, we will implement a method for collecting these sorts of data. We will work internally and with other departments currently doing their own alumni surveys to develop a model for this sort of assessment.

f. *Discussion of Actions the Neuroscience Program will take to Maintain or Improve Indirect Professional Assessment*

We will continue to informally connect with our students’ employers and graduate institutions to assess their preparation.

g. *Discussion of Actions the Department of Psychology will take to Maintain or Improve the Process for Assessment*

We believe that our current program of assessment is comprehensive and generally functions well. That being said, we see the need for improvements in a few areas. As mentioned above, we need to increase participation rates.
### h. Action Plan Summary Table Ordered by Proximity of Action

<table>
<thead>
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<th>Action to be Taken</th>
<th>Date</th>
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<th>Review Schedule</th>
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<td><strong>Implement Peer Mentoring Program</strong></td>
<td>In-progress</td>
<td>Peer Mentoring Coordinator</td>
<td>Annual review for progress/outcomes</td>
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<tr>
<td><strong>Continue developing collaborative partnerships for Neuroscience program that increase research opportunities for our students</strong></td>
<td>In progress</td>
<td>Department Chair and Neuroscience Coordinator</td>
<td>Annual review for progress</td>
</tr>
<tr>
<td><strong>Advocate for CAS Internship Office</strong></td>
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<td>Ongoing</td>
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<tr>
<td><strong>Revise procedures for administering Post-Experience Surveys to increase participation rates</strong></td>
<td>Prior to current semester administration in December</td>
<td>Neuroscience Coordinator</td>
<td>Annual review for necessary revision</td>
</tr>
<tr>
<td><strong>Develop Departmental Alumni survey process</strong></td>
<td>Prior to Fall 2019</td>
<td>Department Chair/Department Associate</td>
<td>Annual review for progress</td>
</tr>
<tr>
<td><strong>Consider revisions to PSYC 201/PSYC 216 sequence</strong></td>
<td>Prior to Fall 2020</td>
<td>PSYC 201/216 instructors in conjunction with all faculty</td>
<td>Annual review for progress</td>
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# Appendix

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Department of Psychology

Neuroscience Assessment Plan (2017-2019)

Department of Psychology – Neuroscience Program Mission Statement

The Department of Psychology – Neuroscience Program at the University of Wisconsin-River Falls (1) provides students with an understanding of the content and methods of neuroscience, (2) prepares students for a lifetime of learning and thinking by cultivating intellectual and communications skills, and (3) promotes personal characteristics that are consistent with high ethical and professional standards. We strive to acquaint students with research findings and theories in numerous areas across neuroscience, biology, chemistry and psychology. This goal is accomplished through a curricular structure that ensures students first take courses in introductory of neuroscience and scientific methodology followed up by courses in the foundations of psychology, biology, and chemistry. We also encourage our students to further their scientific understanding by conducting independent research under the supervision of one or more faculty sponsors. Our department recognizes that many students are seeking careers in health and human services and other applied fields.
Section 1: Learning Outcomes

Engagement with internal stakeholders in developing our learning outcomes

The Neuroscience Program considers its primary internal stakeholders to be our students (majors and minors), our faculty (including tenure-track and IAS), and departments/units with which we closely collaborate (e.g., Biology, URSCA). As will be detailed later in the report, we collect extensive data from our students that we use in our ongoing assessment and curricular development. Our faculty participate in all phases of the assessment process, including assessment development, data collection, data analysis, and evidence-based changes to our curricular and other departmental processes. Thus, our learning outcomes and assessment practices reflect careful consideration of the needs and capacities of our internal stakeholders.

Engagement with external stakeholders in developing our learning outcomes

The Neuroscience Program considers its primary external stakeholders to be our alumni, organizations that employ and welcome our students as interns, and graduate schools that accept and further train our students. We also recognize our obligations and connections to the field of neuroscience as a whole, to our regional and state communities, and to the families who send us the students that we educate. We maintain close contact with our alumni, welcoming them at a number of annual department events. We connect with students’ families on College Visit Days, at prospective student visits, and at departmental events where we encourage students to bring their families. We also interact regularly with UWRF Career Services to informally gather their observations of our students’ readiness for internships and jobs.

Regarding our connection to the field as a whole, the learning outcomes reflect the Faculty for Undergraduate Neuroscience core competencies for an undergraduate neuroscience program published in 2012.


Our program was designed to allow students to complete the neuroscience degree and most of the prerequisites to enter pre-professional programs such as pharmacology, medicine, and occupational therapy.


Thus, our learning outcomes and assessment practices reflect careful consideration of the needs and capacities of our external stakeholders.
Statement of Program Learning Outcomes

Consistent with these findings and our own capacities, our learning outcomes are:

1. Knowledge Base of Neuroscience – A graduate will be able to demonstrate an understanding of basic neuroanatomy and nervous system function on a molecular, cellular and systems level. They will also demonstrate an understanding of the main research approaches, techniques and topics in neuroscience and understand the interdisciplinary nature of neuroscience.

2. Scientific Inquiry and Critical Thinking – A graduate will be able to use scientific reasoning to interpret phenomena in neuroscience, demonstrate information literacy and interpret, design and conduct basic research in neuroscience.

3. Ethical and Social Responsibility in a Diverse World – A graduate will demonstrate an understanding of the relationship between neuroscience and society, including an evaluation of ethical implications in neuroscience research.

4. Communication – A graduate will be able to demonstrate effective writing and communication skills.

5. Professional Development – A graduate will apply neuroscience content and skills to career goals.

Linkage of Learning Outcomes to UWRF Strategic Goals and Initiatives

Distinctive Academic Excellence: The neuroscience major at UWRF is distinctive in a number of respects. First, our curriculum follows a science-based, science-first strategy aligned with core competency findings of the Faculty for Undergraduate Neuroscience professional group (Identifying and using ‘Core Competencies’ to Help Design and Assess Undergraduate Neuroscience Curricula, 2012; LO1 and LO2). Second, our students take foundational courses in multiple disciplines, namely psychology, biology and chemistry. The program is one of the first neuroscience comprehensive undergraduate degrees in the UW-System schools. All students have opportunities to complete several more research experiences in keeping with the 2012-2013 Strategic Initiative focused on Undergraduate Research, Creative, and Scholarly Activity (URSCA). In addition to our emphasis on scientific skills, students strengthen their Knowledge Base in Neuroscience (LO1) as well as their Communication Skills (LO4) as they advance through the curriculum. Ethical and Social Responsibility Skills (LO3) should be especially strengthened as part of the Research Methods course (PSYC 216) and Bioethics (PHIL 220). Professional Development Skills (LO5) are especially strengthened as part of their career exploration in the Introduction to Neuroscience Course.

Innovation and Partnerships: As discussed previously, we participate significantly in internships, field-based educational experiences, and alumni partnerships. While much of our assessment of these practices is informal, we do formally assess student benefits from internship experiences in
our Senior Exit Survey. Our expectation is that all these experiences are especially helpful to students in the development of LOs 3-5.

**Section 2: Profile of Where Learning Outcomes are being Achieved**

*Coursework Experience and Assessments:*

**LO1: Knowledge Base of Neuroscience:** Students should gain a strong knowledge base in neuroscience through the following courses:

3) Our Introductory courses -
   - NSCI 111: Introduction to Neuroscience
   - PSYC 101: General Psychology
   - BIOL 150: General Biology
   - CHEM (varies): One introductory Chemistry Course

4) Our core courses –
   - BIOL 342: Anatomy and Physiology II (focus on the nervous system)
   - BIOL 356: Neurobiology
   - PSYC 350: Sensation and Perception
   - PSYC 355: Physiological Psychology

**LO2: Scientific Inquiry and Critical Thinking:** Students will learn to use scientific reasoning to interpret phenomena in neuroscience, demonstrate information literacy and interpret, design and conduct basic research in neuroscience through the following courses:

1) Our Introductory courses –
   - NSCI 111: Introduction to Neuroscience
   - PSYC 201: Behavioral Statistics or BIOL 231: Biostatistics
   - PSYC 216: Research Methods

2) Our core courses –
   - CHEM (varies): One introductory Chemistry Course
   - BIOL 240: Cellular and Molecular Biology
   - BIOL 342: Anatomy and Physiology II
   - BIOL 351: Epigenetics
   - PSYC 355: Physiological Psychology

**LO3: Ethical and Social Responsibility:** Students will demonstrate an understanding of the relationship between neuroscience and society, including an evaluation of ethical implications in neuroscience research through the following courses:

1) Our Introductory courses –
   - NSCI 111: Introduction to Neuroscience
   - PSYC 216: Research Methods
   - PHIL 220: Bioethics
2) Our core courses –
   BIOL 342: Anatomy and Physiology II
   BIOL 351: Epigenetics

**LO4: Communication:** Students will demonstrate effective writing and communication skills through the following courses:

1) Our Introductory courses –
   NSCI 111: Introduction to Neuroscience
   PSYC 216: Research Methods

2) Our core courses –
   BIOL 240: Cellular and Molecular Biology
   PSYC 355: Physiological Psychology

**LO5: Professional Development:** Students will apply neuroscience content and skills to career goals through the following course:

1) Our Introductory courses –
   NSCI 111: Introduction to Neuroscience

*Out-of-Classroom Experience and Assessments:*

**Independent Research Experiences:** As noted, all students will complete at least one research experience as part of Research Methods. In addition to that, however, we strongly encourage our students to conduct research independently or collaborate with other students on a research project. We have ongoing neuroscience research studies that provide students with opportunities to work in a functioning neuroscience research lab. **LOs 1, 2, 3, 4.**

These experiences will be assessed via our annual data collection of the number of students who have completed these experiences and presented their work at a professional conference (thus ensuring they completed their projects and the peer-review process).

**Teaching/Lab Assistantships:** Students have the opportunity to serve as a teaching/lab assistant to the Introduction to Neuroscience course. The students receive independent study credit for their work. This experience allows them the opportunity to more deeply learn the course concepts as well as to practice assisting other students and communicating with both students and professors. **LOs 1, 3, 4, 5.**

These experiences will be assessed via our annual data collection of the number of students who have served as a Teaching/Lab Assistant.
Section 3: Venues for Assessing Learning Outcomes

Direct Assessments:

<table>
<thead>
<tr>
<th>Course</th>
<th>LO1: Knowledge Base</th>
<th>LO2: Scientific Inquiry</th>
<th>LO3: Ethical and Social Responsibility</th>
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<tr>
<td>NSCI 111 Introduction to Neuroscience</td>
<td>Exams</td>
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</table>

Final Research Paper: All students in PSYC 216: Research Methods complete this paper. In completing this paper, students have to work together to complete a research project, demonstrate an initial understanding of basic scientific methodology, and communicate their findings clearly. The rubric was developed by the course instructors and is designed to tap into the specific Learning Outcomes listed. **LOs 2, 3, 4.**

Career Aspiration Paper: This assignment is completed in NSCI 111: Introduction to Neuroscience and is designed to allow students to become immersed in an area or areas of neuroscience that they could see themselves doing in the future. This paper is tailored to start academic exploration of neuroscience careers early. The rubric was developed by the course instructor and is designed to tap into the specific Learning Outcomes listed **LO5.**

Research Papers and Lab Reports: These assignments are completed by all students in NSCI 111: Introduction to Neuroscience and PSYC 355: Physiological Psychology. In NSCI 111, students have to work together to complete an experiment in both neuropsychopharmacology and neurogenetics, understand basic scientific methodology, and communicate their findings clearly in lab reports. In PSYC 355, students choose a relevant topic in neuroplasticity that is of interest. Students will be able to learn, read critically and synthesize data and theory presented in scholarly works; and develop skills in organizing and writing information. Through this work, they will be able to demonstrate their understanding of the importance of evidence in neuroscience, scientific methodology related to neuroscience and demonstrate written
communication skills. The rubric was designed by the course instructor and is designed to tap into the specific Learning Outcomes listed. **LOs 1, 2, 4.**

Presentations: This assignment is completed in PSYC 355: Physiological Psychology. As part of this assignment, students work in groups to present information on an assigned neurotransmitter. Through this work, they will be able to demonstrate their understanding of the importance of evidence in neuroscience, demonstrate oral communication skills, and work with others to complete the project. The rubric was designed by the course instructor and is designed to tap into the specific Learning Outcomes listed. **LOs 2, 4.**

**Indirect Assessments:**

Senior Exit Survey: All graduating seniors are asked to complete our exit survey. This survey assesses their feelings and attitudes toward the major, their perceptions of their own learning for all core areas of neuroscience as well as for statistics and methods, and their future plans.

Research Methods Survey: Those students taking Research Methods (PSYC 216) will be asked to assess their perceptions of their own learning. This survey was developed by the course instructors with respect to the Learning Outcomes and is administered in PSYC 216: Research Methods.

Annual Data Collection by the Departmental Program Associate (collected each May):

1) Number of Students Conducting and Presenting Independent Research with a Neuroscience Faculty Mentor. As noted, students who present their independent research must successfully master the peer review process for their specific conference (e.g., MidBrains, Society for Neuroscience Conference, Midwestern Psychological Association, Minnesota Undergraduate Psychology Conference).

2) Number of Students Completing a Teaching/Lab Assistantship with a Neuroscience Faculty Mentor.

See Attached: All Direct and Indirect Assessments (Tests, Rubrics, and Surveys).

**Section 4: Process for Assessment**

There is no professional accreditation available for undergraduate neuroscience program.

Assessment Reports will be completed in May of each year based on the previous academic year’s data. These Assessment Reports will be aggregated and used by the Assessment and Program Prioritization Committees every three years and by the Program Audit and Review Committee every six years.
Data Collection

Assessments will be collected each semester

1) Senior Exit Survey
   Data collected by the coordinator, scored by the Program Associate, and analyzed by
   the department. Data are stored in the Psychology office (e.g., each student survey).

2) Final Research Papers and Survey (PSYC 216: Research Methods)
   Data collected by the instructor of each section of the course. The instructor will also
   compile averages overall and, perhaps, for specific Learning Outcomes using the
   rubric. Data are stored by each instructor for each section (e.g., rubric for each student
   paper).

3) Presentation (PSYC 355: Physiological Psychology)
   Data collected by the instructor of the course. The instructor will also compile
   averages overall and, perhaps, for specific Learning Outcomes using the rubric. Data
   are stored by each instructor for the course (e.g., rubric for each student presentation).

4) Career Aspiration Assignment (NSCI 111: Introduction to Neuroscience)
   Data collected by the instructor of the course. The instructor will also compile
   averages overall and, perhaps, for specific Learning Outcomes using the rubric. Data
   are stored by each instructor (e.g., rubric for each student paper).

5) Research Papers and Lab Reports (NSCI 111: Introduction to Neuroscience and
   PSYC 355: Physiological Psychology)
   Data collected by the instructor of the course. The instructor will also compile
   averages overall and, perhaps, for specific Learning Outcomes using the rubric. Data
   are stored by each instructor (e.g., rubric for each student paper).

6) Data will be collected on the number of students participating in and presenting
   research, studying internationally for credit, completing Teaching/Lab Assistantships
   and completing Internships. These data will be collect via the Exit Survey (each
   term).

Reports, Action, and Accountability

The Assessment Report will be generated by the program coordinator in May and discussed at
the first or second meeting of the academic year and revised (September).

As part of that meeting, the department (including all faculty and the departmental Program
Associate) will discuss any deficiencies or problems that have become clear as part of the data
collection and analysis and action steps will be generated. This discussion will include a
comparison of our Learning Outcomes to those of the Faculty for Undergraduate Neuroscience
on whose guidelines our Learning Outcomes were developed and that we would consider
benchmarks for learning in our field.
The Assessment Plan as well as annual Reports may be placed on the department website. This placement should allow both internal and external stakeholders (e.g., parents, prospective students, graduate programs) to better understand our Learning Outcomes and the progress we are making in meeting these outcomes.
APPENDIX-ASSESSMENT TOOLS

Possible Future Neuroscience Aspirations Paper Guidelines

This assignment is designed to allow you to become immersed in an area or areas of neuroscience that you could see yourself doing in the future. There are so many branches of neuroscience, so there is practically an infinite amount of opportunities throughout this field. This paper is tailored to start academic exploration of neuroscience careers early. In your paper describe and discuss the following:

- What sparked your interest in neuroscience? (Or should I say fired your neurons?)
- What have you found the most interesting topic we’ve studied? Is that directly correlated with what you’d like to pursue?
- What is your primary area(s) of interest in neuroscience? What is your ultimate goal (this can be as practical or outlandish as you’d like).
- Lastly, how has NSCI 111 helped steer your interest in neuroscience?

The paper will be due on December 11th, before midnight in the D2L DropBox. The paper is worth 60 points.

General Instructions:

Your paper should be about 2 – 3 typed, double-spaced pages, not including a title page, any references, or attached documents. Please use standard margins (1 - 1½”) and typeface size. The final grade of the paper will be based on content, style and grammar.

Content (30 points): Make sure you follow all of the directions for the paper topic. Make sure your paper is free of plagiarism.

Style (15 points): The purpose of your paper should be clear and your ideas should be stated clearly and thoroughly discussed. Provide an introduction that leads the reader smoothly into the body of the paper and a conclusion that reemphasizes the central idea. The support paragraphs should stay with the main point of the paper and relate clearly to each other. Sentences should be fluent, clear and concise with accurate vocabulary or words.

Grammar (15 points): Be sure to proof-read your paper before turning it in. Avoid shifts in verb tense, lack of agreement between subject and verb, unclear pronoun references, sentence structure and punctuation errors and misspelled words.
Neuroplasticity Paper Guidelines

An important component of Physiological Psychology (PSYC 355) is a paper preparation. This assignment is designed to allow you to become immersed in a topic related to neuroplasticity; to learn, read critically and synthesize data and theory presented in scholarly works; and develop your skills in organizing and writing information.

The paper will be due on Friday December 15th, before midnight in the D2L DropBox. The paper is worth 100 points.

Make sure I approve your topic before you get started. If you want to discuss the content of your paper or if you have any questions, we can always set up a meeting to talk about the paper.

General Instructions:

Your paper should be about 6 – 7 typed, double-spaced pages, not including a title page, any references or attached documents. Please use standard margins (1 - 1½”) and typeface size. The final grade of the paper will be based on content, style and grammar.

Content (70 points): Make sure you follow all of the directions for your paper topic. Be sure to demonstrate a good understanding of the purpose and conclusions of any studies you cite. Make sure your paper is free of plagiarism.

Style (15 points): The purpose of your paper should be clear and your ideas should be stated clearly and thoroughly discussed. Provide an introduction that leads the reader smoothly into the body of the paper and a conclusion that reemphasizes the central idea. The support paragraphs should stay with the main point of the paper and relate clearly to each other. Sentences should be fluent, clear and concise with accurate vocabulary or words.

Grammar (15 points): Be sure to proof-read your paper before turning it in. Avoid shifts in verb tense, lack of agreement between subject and verb, unclear pronoun references, sentence structure and punctuation errors and misspelled words.

Your paper should include 6 – 8 scholarly references. You must include a reference page citing these sources. Wikipedia IS NOT an acceptable source for references. Also, do not cite class lectures. In addition to PsycINFO, a good source for locating references for your paper is:

Provided with an outline, I can help develop your direction, but written paragraphs are strongly encouraged. Written compositions will allow me to best access your writing skills. The more work you have done, the more feedback you will receive. This feedback will ultimately translate into a better evaluation of your final paper.

Policy Regarding Late Papers:
Any paper turned in after the due date will receive a letter grade deduction for each day late.

Topic
A central underlying theme of this course is neuroplasticity, or the nervous system’s potential for physical or chemical change that enhances its adaptability to environmental change. Describe, in detail, an example of how experience (ex. learning, memory) can influence such changes in the brain. Describe the physical, morphological or chemical changes in the nervous system that result from the experience. Cite studies (ex. imaging studies, basic animal research) that provide evidence for your example of neuroplasticity.
Neuropsychopharmacology Lab Report Guidelines

Lab reports are an essential part of all laboratory courses and a part of your grade. Here's a format for a lab report you can use if you aren't sure what to write or need an explanation of what to include in the different parts of the report. A lab report is how you explain what you did in the experiment, what you learned and what the results mean. Here is a standard format.

Title Page: a single page that states:
- The title of the experiment. The title says what you did. It should be brief (aim for ten words or less) and describe the main point of the experiment. If you can, begin your title using a keyword rather than an article like 'The' or 'A'.
- Your name

Introduction: Usually, the Introduction is one paragraph that explains the objectives or purpose of the lab. In one sentence, state the hypothesis. Include some background information. You need to state the purpose of the experiment, or why you did it. This would be where you state your hypothesis.

Methods: Describe the steps you completed during your investigation. This is your procedure. Write it as if you were giving direction for someone else to do the lab.

Results: Describe in words what the data mean.

Discussion: This is where you interpret the data and determine whether or not a hypothesis was accepted. This is also where you would discuss any mistakes you might have made while conducting the investigation. You may wish to describe ways the study might have been improved.

Conclusions: Most of the time the conclusion is a single paragraph that sums up what happened in the experiment, whether your hypothesis was accepted or rejected, and what this means.

Figures & Graphs: Graphs and figures must both be labeled with a descriptive title. Label the axes on a graph, being sure to include units of measurement. The independent variable is on the X-axis. The dependent variable (the one you are measuring) is on the Y-axis. Be sure to refer to figures and graphs in the text of your report. The first figure is Figure 1, the second figure is Figure 2, etc.

References: If your research was based on someone else's work or if you cited facts that require documentation, then you should list these references.
General Instructions:

Your paper should be about 3 – 5 typed, double-spaced pages, not including a title page, any references, or attached documents. Please use standard margins (1 - 1½”) and typeface size. The final grade of the paper will be based on content, style and grammar.

Content (30 points): Make sure you follow all of the directions for the paper topic. Be sure to demonstrate a good understanding of the purpose and conclusions of any studies you cite. Make sure your paper is free of plagiarism.

Style (10 points): Sentences should be fluent, clear and concise with accurate vocabulary or words. Use standard scientific format (AP Format).

Grammar (10 points): Be sure to proof-read your paper before turning it in. Avoid shifts in verb tense, lack of agreement between subject and verb, unclear pronoun references, sentence structure and punctuation errors and misspelled words.

The paper will be due on November 20th before midnight in the D2L DropBox. The paper is worth 50 points.
Neurogenetics Lab Report Guidelines

Lab reports are an essential part of all laboratory courses and a part of your grade. Here's a format for a lab report you can use if you aren't sure what to write or need an explanation of what to include in the different parts of the report. A lab report is how you explain what you did in the experiment, what you learned and what the results mean. Here is a standard format.

Title Page: a single page that states:
- The title of the experiment. The title says what you did. It should be brief (aim for ten words or less) and describe the main point of the experiment. If you can, begin your title using a keyword rather than an article like 'The' or 'A'.
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Results: Describe in words what the data mean.

Discussion: This is where you interpret the data and determine whether or not a hypothesis was accepted. This is also where you would discuss any mistakes you might have made while conducting the investigation. You may wish to describe ways the study might have been improved.

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References: If your research was based on someone else's work or if you cited facts that require documentation, then you should list these references.

General Instructions:

Your paper should be about 3 – 5 typed, double-spaced pages, not including a title page, any references, or attached documents. Please use standard margins
(1 - 1½’) and typeface size. The final grade of the paper will be based on content, style and grammar.

**Content (30 points):** Make sure you follow all of the directions for the paper topic. Be sure to demonstrate a good understanding of the purpose and conclusions of any studies you cite. Make sure your paper is free of plagiarism.

**Style (10 points):** Sentences should be fluent, clear and concise with accurate vocabulary or words. Use standard scientific format (AP Format).

**Grammar (10 points):** Be sure to proof-read your paper before turning it in. Avoid shifts in verb tense, lack of agreement between subject and verb, unclear pronoun references, sentence structure and punctuation errors and misspelled words.

The paper will be due on December 20th **before midnight** in the D2L DropBox. The paper is worth 50 points.
**Neurotransmitter Caucus**

During a caucus, voters in attendance divide themselves into groups according to the candidate they support. The undecided voters congregate in their own group and prepare to be persuaded by supporters of other candidates. Voters in each group are then invited to give speeches supporting their candidate, trying to persuade others to join their group. At the end of the caucus, officials count the voters in each candidate's group and calculate how many delegates to the convention each candidate has won.

You will work in groups of four and each group will represent a “candidate” neurotransmitter. Each group will have five minutes to present information about their “candidate” neurotransmitter and prepare a presentation aimed at convincing the undecided voters to vote for their “candidate” neurotransmitter. Everyone in the group can speak or each group can choose one spokesperson.

For the presentation, either prepare PowerPoint slides or handouts that include the following information about your “candidate” neurotransmitter:

- When and how was the neurotransmitter discovered
- What is the importance of the neurotransmitter in behavior
- What are some common drug effects with the neurotransmitter
- What are the diseases or disorders associated with the neurotransmitter

Students not in their assigned neurotransmitter group will act as “undecided voters”. These voters are going to decide which “candidate” neurotransmitter they want to support in the caucus based on the candidates’ positions. The "undecided voters" in the class can ask questions of the candidates and make points about an issue if they choose. After the final arguments, all students, including those who were originally assigned to support a particular “candidate” neurotransmitter, can vote for whichever “candidate” they prefer.
Point Distribution – Final Paper Psyc 216 Research Methods

Title Page (3 points)
- Page header included (words running head and actual running head) (1)
- The page number is included (.5)
- Study Title which overviews study (IV and DV) (1)
- Name & Affiliation (.5)

Abstract (5 points)
- The abstract should roughly 250 words in length. (.5)
- Written in APA format (left justified, double spaced, abstract is centered) (.5)
- Your abstract covers information about your topic or hypotheses (.5)
- Your abstract includes a brief statement about your participants (1)
- Your abstract includes a summary information about your methods (1)
- Your abstract discusses the pattern of your results (1)
- Your abstract includes a statement of implications of the findings (.5)

Introduction (25 points)

First Component – Statement of Purpose and Theory (5 points)
- Started the paper with an opening to the problem and board general topic of interest (2)
- A description of what your specific study topic. Defined terms if necessary. (1.5)
- A discussion of the theory for why the IV affects the DV. (1.5)

Second Component – Use of 4 Scholarly Source Articles (15 points)
- Overview of three experimental articles for the discussion of the IV \(\rightarrow\) DV (Goal or hypotheses, What was done, Results, Implications) (6)
- Overview of one experimental study related to the PV \(\rightarrow\) DV (2)
- Discussion about how/why these studies are relevant for your research topic (3)
- Transitioned into each article overview (1)
- Followed APA in text citing (3)

Third Component – Overview Paragraph and Hypotheses (5 points)
- Provided an overview of the current study and methods (1.5)
- Appropriate (hypotheses should be specific, logical based on background studies, discuss the appropriate relationship)
  - hypothesis for main effect 1 (1)
  - Appropriate hypothesis for main effect 2 (1)
  - Appropriate hypothesis for interaction effect (1)
- Followed the hypotheses formatting method (.5)

Method (20 points)

Participants (6 Points)
- Discussed the total number of participants and in each condition (1)
- Identified important demographic information of your participants (gender, age, race/ethnicity, grade). (3)
- Described how participants were selected and if they were compensated in any way. (2)

Design and Materials (9 Points)
- Stated the type of experimental design (2)
- Stated how the IV and DV were operationalized (2)
- Described each material used in sufficient detail (4)
- Did not discuss how the materials were used and focused on description (1)
Procedure (5 Points)
___ Based on the description in the paper it is clear what you intend to do during the experiment. (3)
___ Discussed any extraneous variables that were controlled for. (2)

Results (15 points)

Results Write Up (10 Points)
___ Stated the statistical test used in the study (1)
___ Stated why you used the aforementioned statistical technique. (.5)
___ Discussed how groups were divided for analysis. (.5)
___ Stated whether your hypothesis 1 was supported with proper APA style (including degrees of freedom, F-value obtained, and p-value) (1.5)
___ Stated whether your hypothesis 2 was supported with proper APA style. (1.5)
___ Include both group’s means and standard deviations for supported main effect. (1)
___ Stated whether your hypothesis 3 was supported with proper APA style (1.5)
___ The text should orient the reader to your figure (.5)
___ Did not to interpret your results in this section. (.5)
___ Followed APA format with the italicizes information and decimal places (1.5)

Between Groups ANOVA Table (5 Points)
___ Accurate title for the table (1)
___ APA format was followed for the italicized information, table formatting, and decimal places (1)
___ Included the necessary information (main effects, interaction, total, etc.) (2)
___ Was correctly placed in the paper (1)

Discussion (17 points)
___ Restated the goal of the study and hypotheses (2)
___ Discussed whether the hypothesis for the interaction was supported and accurately interpreted the interaction (2)
___ Discussed whether the hypotheses for the main effects were supported (2)
___ Related the findings to past scholarly research (included APA citing format) (2)
___ Discussed conclusions you can draw from this finding and how the research can be applied to everyday living (2)
___ Discussed limitations of the study (2)
___ Suggestions for future research – ideas (2)
___ Suggestions for future research – design (2)
___ Conclusion paragraph that discusses the importance of the findings (1)

References (5 Points)
___ Reference entries should be aligned with the left margined and second and subsequent lines are indented. (.5)
___ All references in the paper are listed in the reference section and vice versa (1)
___ All references are in alphabetical order (.5)
___ Information in the references is in the APA format: author(s), year, title of the article, journal name, volume number, page numbers. (3)

___ Spelling, grammar, APA-style (10 points)
___ Spelling, grammar, use of psychological terms (2)
___ Page header and numbers throughout the manuscript (1)
___ Section headings in APA format (2)
___ Appendix section in APA format and in correct order (1)
___ Correct tense for each section (1)
___ Meets page requirements (3)

_____ Total Score 100 Points
Department of Psychology - Neuroscience
Graduating Senior Exit Survey

Congratulations on your imminent graduation. Please take a few minutes to complete this survey. It allows you an opportunity to give the department feedback about your educational experience and help us to maintain and improve our services to current and future students. Thank you,
The Psychology Department Faculty

Part I – Personal Information [All Information Will Be Kept Confidential.]

1. Semester graduating ________________

2. How many classes in your major did you take elsewhere and transfer to UWRF?
   _____ None     _____ 1 to 2     _____ 3 to 4     _____ 5 or more

3. Do you have a minor?
   _____ No
   _____ Yes (If yes, what department?) ____________________

4. Do you have additional majors?
   _____ No
   _____ Yes (If yes, what department(s)?) ____________________
5. Did you participate in any **faculty supervised research** in neuroscience?
   ___No (If no, please skip to question 6 on the next page regarding international study experience)
   ___Yes (If yes, please answer the following questions)

Participation in **faculty supervised research** helped me develop familiarity with concepts, principles and themes in neuroscience.

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Participation in **faculty supervised research** helped me use scientific reasoning, demonstrate information literacy, and interpret, design, and conduct basic research in neuroscience.

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Participation in **faculty supervised research** helped me apply ethical standards to evaluating neuroscience and practice.

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Participation in **faculty supervised research** helped me to develop skills in effective writing and presenting.

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Participation in **faculty supervised research** helped me apply neuroscience content and skills to my graduate school and/or career goals.

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6. Did you participate in any international study experiences?
___ No (If no, please skip to question 7 below regarding internship experience)
___ Yes (If yes, please answer the following questions)

Participation in international study experiences helped me apply ethical standards to evaluating neuroscience and practice.

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Participation in international study experiences helped me apply neuroscience content and skills to my graduate school and/or career goals.

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7. Did you participate in any internships?
___ No (If no, please skip to question 8 on the next page regarding teaching/lab assistant experience)
___ Yes (If yes, please answer the following questions)

Participation in internships helped me apply ethical standards to evaluating neuroscience and practice.

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Participation in internships helped me develop skills in effective writing and presenting.

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Participation in internships helped me apply neuroscience content and skills to my graduate school and/or career goals.

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8. Did you participate as a teaching/lab assistant for a neuroscience professor?
   ___ No (If no, please skip to question 9 below)
   ___ Yes (If yes, please answer the following questions)

   Participation as a teaching/lab assistant helped me apply ethical standards to evaluating neuroscience and practice.

   Strongly Agree    Agree    Slightly Agree    Slightly Disagree    Disagree    Strongly Disagree
   ___     ___     ___     ___     ___     ___     ___

   Participation as a teaching/lab assistant helped me develop skills in effective writing and presenting.

   Strongly Agree    Agree    Slightly Agree    Slightly Disagree    Disagree    Strongly Disagree
   ___     ___     ___     ___     ___     ___     ___

   Participation as a teaching/lab assistant helped me develop skills to build on my graduate school and/or career goals.

   Strongly Agree    Agree    Slightly Agree    Slightly Disagree    Disagree    Strongly Disagree
   ___     ___     ___     ___     ___     ___     ___

Part II – Goals and Future Plans

9. Which field best describes the area in which you plan to be working?
   ___ Health Sciences – Medicine/Healthcare (Pharmacy/Physician/Nursing/PT/OT)
   ___ Health Sciences – Psychology (Clinical/Psychiatry)
   ___ Education
   ___ Research and Development
   ___ Public Policy/Health
   ___ Other _____________________________________________

10. Are you planning on going to graduate/professional school?
    ___ No.
    ___ Yes, I have applied and have been accepted.
    ___ Yes, I have applied but have not been accepted yet
    ___ Yes, I will apply within this academic year
    ___ Yes, I am planning to go but not until later.

    If you have applied or have been accepted, where did you apply?

    ___________________________________________________________________________________

    Masters Level (MA/MS)? ___ Doctoral Level (Ph.D.)? ___ Both? ___
Part III – Skill Development

How strongly do you agree that your experiences in the Psychology Department – Neuroscience Major helped to develop your:

11. Skill in reading academic materials in neuroscience (e.g., research articles, textbooks, etc.)?
   
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12. Critical thinking skills (e.g., assessing information, developing new ideas)?

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13. Skill in conducting statistical analysis?

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14. Skill in interpreting statistical results?

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15. Skill at conducting research overall?

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16. Oral communication skills?

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17. Written communication skills?

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18. Teamwork/Interpersonal skills?

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Part IV – Interpersonal Aspects of Education and Overall Satisfaction

19. My training and experiences as a neuroscience major have helped me appreciate individual and cultural differences.

   Strongly Agree  Slightly Agree  Slightly Disagree  Disagree

20. My training and experiences as a neuroscience major have helped me to develop high ethical standards.

   Strongly Agree  Slightly Agree  Slightly Disagree  Disagree

21. I am satisfied with my ability to assess my own talents and career options.

   Strongly Agree  Slightly Agree  Slightly Disagree  Disagree

22. I am satisfied with the information I received from the Psychology Department – Neuroscience Major about graduate school (e.g., options, application process).

   Strongly Agree  Slightly Agree  Slightly Disagree  Disagree

23. I am satisfied with the information I received from the Psychology Department – Neuroscience Major about careers in neuroscience.

   Strongly Agree  Slightly Agree  Slightly Disagree  Disagree

24. I am satisfied with the opportunities I had to interact with faculty outside the classroom.

   Strongly Agree  Slightly Agree  Slightly Disagree  Disagree

25. I am satisfied with the academic advising I received in the Psychology Department – Neuroscience Major.

   Strongly Agree  Slightly Agree  Slightly Disagree  Disagree

26. To what extent do you agree that if you had it do over again you would major in neuroscience.

   Strongly Agree  Slightly Agree  Slightly Disagree  Disagree

27. I am satisfied with the quality of the education that was provided to me.

   Strongly Agree  Slightly Agree  Slightly Disagree  Disagree
Part V – Things You Would Change and Things You Liked

28. What other things should the Psychology Department – Neuroscience Major change to enhance the educational experiences we provide to our majors?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
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________________________________________________________________________

29. What do you feel that the Psychology Department – Neuroscience Major does especially well that you would want to see continued?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
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Thank you for completing this survey and for the time and effort you put into completing your Neuroscience Major. Best wishes as you enter a career or continue your studies.
NOTE: This page will be removed.

We are required to contact all students after they graduate to assess their job/graduate school experiences. Please list contact information that we may use within the next one to two years.

Name: __________________________________________________

Expected Graduating Term: ______________________________________

Non-UWRF Email: ____________________________________________

Phone Number: ______________________________________________

I am on:

Facebook      Yes (name: _______________________________)  No
Linked In     Yes (name: _______________________________)  No
Instagram    Yes (name: _______________________________)  No

Other? ______________________________________________________