ST MARY'S COLLEGE of MARYLAND
The National Public Honors College

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November 12, 2020

James D. Fielder, Jr., Ph.D.
Secretary of Higher Education
Maryland Higher Education Commission
6 North Liberty Street
Baltimore, MD 21201

Secretary Fielder:

Please find the attached proposal for a major in Neuroscience at St. Mary's College of Maryland. I believe you will find the proposal an excellent addition to our curriculum.

As per the proposal template, President Jordan and I confirm that the College's Hilda C. Landers Library has sufficient resources to support the proposed program and that the College has sufficient equipment and facilities to support the proposed program.

If there are any questions concerning this proposal, please contact Dr. Christine Wooley, Associate Dean of Curriculum (cawooley@smcm.edu or 240-895-3081).

Sincerely,

Michael R. Wick, PhD
Provost and Dean of Faculty

Attachment: Neuroscience Proposal

Office Use Only: PP#

Cover Sheet for In-State Institutions
New Program or Substantial Modification to Existing Program

Institution Submitting Proposal	St. Mary's College of Maryland

Each action below requires a separate proposal and cover sheet.

- (X) New Academic Program
- ( ) New Area of Concentration
- ( ) New Degree Level Approval
- ( ) New Stand-Alone Certificate
- ( ) Off Campus Program
- ( ) Substantial Change to a Degree Program
- ( ) Substantial Change to an Area of Concentration
- ( ) Substantial Change to a Certificate Program
- ( ) Cooperative Degree Program
- ( ) Offer Program at Regional Higher Education Center

Payment Submitted: ( ) Yes ( ) No Payment Type: (•) R*STARS # ( ) Check # ( ) Text Payment Amount: $850 Date Submitted: 2/3/21

Department Proposing Program	Psychology	
Degree Level and Degree Type	Bachelor of Science (major)	
Title of Proposed Program	Neuroscience	
Total Number of Credits	128	
Suggested Codes	HEGIS: 129914	CIP: 261501
Program Modality	(X) On-campus	( ) Distance Education (*fully online*)
Program Resources	(X) Using Existing Resources	( ) Requiring New Resources
Projected Implementation Date	(•) Fall ( ) Spring ( ) Summer	Year: 2021
Provide Link to Most Recent Academic Catalog	URL: smcm.edu/catalog/	
Preferred Contact for this Proposal	Name: Christine Wooley	
	Title: Assoc. Dean of Curriculum	
	Phone: 240-434-5674	
	Email: cawooley@smcm.edu	
President/Chief Executive	Type Name: Tuajuanda C. Jordan	
	Signature: Tuajuanda C. Jordan February 15, 2021 Date: 1/19/21	
	Date of Approval/Endorsement by Governing Board: Oct. 16, 2021	

Revised 1/2021

Proposal for Neuroscience Major at St. Mary's College of Maryland (SMCM)

A. Centrality to Institutional Mission and Planning Priorities:

1. Provide a description of the program, including each area of concentration (if applicable), and how it relates to the institution's approved mission.

The field of Neuroscience is interdisciplinary in nature, exploring the molecular, cellular, and genetic aspects of nervous system functioning as well as their influences on behavior. Our Neuroscience major mirrors this interdisciplinarity by utilizing core courses in biology, chemistry/biochemistry, and psychology, and offering specific methodological, research, and upper-division neuroscience content. Additional breadth of study will come from upper-level work in at least two contributing disciplines. One reconfigured Neuroscience course and three new upper-level Neuroscience courses will provide coherence to the major. There are no "official" concentrations within this program, but flexibility in upper-level work allows students to pursue coursework and experiences that best fit their interests and post-graduation goals.
In line with SMCM's Mission Statement, the Neuroscience major will provide *"a rigorous and innovative curriculum; experiential learning; scholarship and creativity; close mentoring relationships; and a community dedicated to honesty, civility, and integrity".* A breakdown of how the program will fulfill each of these aspects of the mission is provided below.

Building a Rigorous and Innovative Curriculum
A full understanding of the field of Neuroscience requires not only knowledge about the function of the nervous system and its relation to behavior but also requires a grasp of the methodology behind neuroscientific research. In addition to providing foundational neuroscience content, our curriculum is designed to foster critical thinking by showing students how to develop, analyze, interpret, and conduct empirical studies. We are also committed to providing our students with the practical skills that they will need for their future careers. For example, throughout the Neuroscience coursework, students will learn how to write a cover letter, how to create a CV/resume, how to articulately present their research interests, and will undergo a mock interview that is tailored to the position that they are seeking after graduation. Finally, our major provides a good balance between breadth and depth within neuroscience. Majors will be well-prepared for graduate work or careers related to neuroscience and the health sciences, while also having a strong liberal arts background.

Engage in Experiential Learning
Experiential learning is at the core of our College and our program. As outlined in the previous paragraph, we are just as concerned about the *process* of learning as we are the *content* that is learned. Effective learning takes place when students are engaged in active participation and are given hands-on experiences. Our curriculum is designed to do just that with the integration of formal labs (and laboratory-like activities in courses without a designated lab), which not only aid in their understanding of concepts discussed in class, but also gives them opportunities to

analyze and interpret empirical studies and to develop and test their own hypotheses. Additional important examples of how we incorporate experiential learning into our curriculum are noted in the paragraph below.

Developing Close Mentoring Relationships Through Scholarship and Creativity
The Neuroscience major creates an environment where faculty and students work collaboratively on neuroscience-related research questions. This starts early with one-on-one or small group meetings with faculty about developing research ideas in introductory classes. These relationships are further developed through directed research opportunities as well as a course that is designed around conducting research as a group (NEUR 302). The deepest mentor/mentee relationships are often developed through a senior capstone experience (called the St. Mary's Project), in which students work closely with a faculty member to develop, conduct, and analyze a study over the course of two semesters.

Foster a Community that is Dedicated to Honesty, Civility, and Integrity
Our major will foster a sense of community through shared experiences at multiple levels: Introductory (NEUR 201), intermediate (NEUR 302) and advanced (NEUR 310, NEUR 493, NEUR 494). This is an important consideration, as many of the courses students will take to complete the major will come from outside the NEUR HEGIS code. Students also gain shared experiences in the classroom by working in smaller groups to solve problems (modeling "team science"). Community outside of the classroom is encouraged through supporting student Neuroscience clubs (Neuroscience Resource Club, Nu Rho Psi), student engagement with the local schools (Southern Maryland Brain Bee), and group meetings with visiting Neuroscience Seminar speakers. As a program we also strive to instill the values of honesty and integrity in our students. For example, in introductory Neuroscience courses, we specifically focus on honesty and integrity within the context of research and discuss ethical issues, including rigor and reproducibility within science. Lastly, a core feature of our program is that we encourage civility through the active discussion of the material that we are covering. For these discussions to work well, students must learn to communicate in a way that respects other students in the classroom, even if they disagree. The benefit of our smaller classroom sizes is that it allows instructors to set ground rules and the overall tone for these discussions.

2. Explain how the proposed program supports the institution's strategic goals and provide evidence that affirms it is an institutional priority.

The strategic goals that are related to our program are in many ways a restating of the different components of our College mission. Thus, many of the ways that the new Neuroscience major supports the strategic goals of the College have already been addressed in section A.1.
The Neuroscience major relates to three of the College's five strategic goals.

- Strategic Goal #1: *"Attract Intellectually ambitious students who thrive in and respect a diverse, collaborative learning community."*

    - This particular strategic goal overlaps with one aspect of the mission already addressed in the previous section ("*Foster a Community that is Dedicated to Honesty, Civility, and Integrity*").
    - Additionally, our current students and faculty are committed to engaging with prospective students through participation in Admission Events such as Fall semester Open Houses and Spring semester Admitted Students Days.
    - Our students and faculty also engage in local outreach experiences, such as the Brain Bee, to highlight SMCM neuroscience-related research and education.
    - The Neuroscience program has also hosted a Neuroscience Seminar Series since 2003 that brings in 4-6 Neuroscientists per year to talk about their work and to meet with students and faculty. Many of our students have secured employment after graduation as a direct result of these interactions.

- Strategic Goal #2: "*Engage students in a rigorous, experiential, flexible, innovative academic environment that capitalizes on our unique geographical location."*
    - This particular strategic goal overlaps with two aspects of the mission already addressed in the previous section ("*Building a Rigorous and Innovative Curriculum" and* "*Engaging in experiential learning*").
    - In addition, we would like to note that flexibility is key in our program. Because our major approaches neuroscience in an interdisciplinary way, students may wish to focus on more of the behavioral or molecular/cellular aspects of the field. We have structured our upper-level electives in a way to allow students to pursue the advanced coursework that best lines up with their interests and goals after graduation.

- Strategic Goal #4: *"Graduate prepared, responsible, and thoughtful global citizens and leaders."*
    - Through rigorous interdisciplinary course work, deep mentor/mentee relationships, and practical skill building, students become responsible and thoughtful global citizens and are well-prepared for graduate work while also having a strong liberal arts background.

3. Provide a brief narrative of how the proposed program will be adequately funded for at least the first five years of program implementation. (Additional related information is required in section L).

The benefit of developing a Neuroscience major at St. Mary's College of Maryland is that it builds on an already strong minor that has been running for 17 years. The major is, in many ways, an expansion of the current minor and will rely primarily (although not exclusively) on courses that are already offered. Our ability to offer the few new/expanded courses and research offerings in the major can be covered by the addition of one new shared Neuroscience/Biology line, which will be filled and active starting Fall 2021. The addition of the

new line will also allow SMCM to cover all core Neuroscience courses (NEUR 201, NEUR 302, NEUR 310) as well as upper-level courses in areas of faculty specialty. Specific financial details of the 5-year roll-out plan are provided in section L.

4. Provide a description of the institution's commitment to:

    a) ongoing administrative, financial, and technical support of the proposed program

Administrative Support:
As noted in the previous section, we are hiring an additional faculty member with shared effort between the Neuroscience and Biology program. However, we do not envision the need to expand existing clerical and laboratory support staff to meet the needs of the Neuroscience major.

Financial Support
The addition of the new courses in the major will require increases in the instructional budget for the Neuroscience program, mostly for laboratory supplies. No major equipment purchases or space renovations are necessary to accommodate this new program.

Technical Support
The program will draw on the existing College infrastructure, which already includes support of technology and classroom spaces.

    b) continuation of the program for a period of time sufficient to allow enrolled students to complete the program.

Most of the existing faculty, coursework, and infrastructure are already in place to support the Neuroscience major. We have also been supporting a version of the program in the form of a "Student Designed Major" in Neuroscience for over a decade. Additionally, there is a high demand for this program. For example, an external consultant (Stamats Communications) found that the number of Neuroscience degrees awarded increased 86% between 2014 and 2018 in the College's core market. For these reasons, we are confident that the College will continue to support the program for a sufficient period of time to allow incoming students to complete the program.

B. Critical and Compelling Regional or Statewide Need as Identified in the State Plan:

1. Demonstrate demand and need for the program in terms of meeting present and future needs of the region and the State in general based on one or more of the following:

a) The need for the advancement and evolution of knowledge

As a field, Neuroscience is situated at the cutting edge of technological and scientific breakthroughs. Recently, national initiatives have been directed at the advancement of research for neuroscience-related applications (e.g. U.S. Brain Initiative). As the need for treatment and support of those who suffer from diseases of the brain (Alzheimer's, Parkinson's, depression, addiction, etc.) increases, it is critical that we prepare our students to discover new information about how the nervous system functions, and to be able to develop and engage with novel therapies to treat these disorders.

At the moment, only one other public institution (University of Maryland, College Park) and two private institutions (Johns Hopkins University and Mount St. Mary's University) offer a Neuroscience major in the state of Maryland. Our College is unique, in that it is the only public liberal arts institution to offer a Neuroscience major in the state. This designation gives us the accessibility of a public institution with small class sizes and experiences common at liberal arts institutions. We also believe that the interdisciplinary nature and the breadth of course offerings in our program will help advance students' knowledge and give them the foundations to fill the developing workforce in the field of neuroscience.

b) Societal needs, including expanding educational opportunities and choices for minority and educationally disadvantaged students at institutions of higher education

We expect that students who will be attracted to the Neuroscience major at SMCM will closely reflect those who have been involved in our minor. From 2005-2019, 43% of the students in the Neuroscience minor are members of at least one underrepresented group (minority, first generation, or low income students). Over this same period of time, 70% of our students identified as female (compared to 56% across all STEM fields at SMCM). Our students have also had success after graduation, with 94% (34/36 respondents) of Neuroscience minors employed, engaged in public service, or enrolled in graduate school within one year (data from 2016-2018 graduates). Out of those 94%, almost a third of students (10/34 respondents) attended graduate school.

c) The need to strengthen and expand the capacity of historically black institutions to provide high quality and unique educational programs

Not applicable.

1. Provide evidence that the perceived need is consistent with the **Maryland State Plan for Postsecondary Education**.

The Maryland State Plan for Postsecondary Education identifies Access, Success, and Innovation as three key goals, and outlines a number of strategies to achieve these goals. The Neuroscience major explicitly supports the following strategies outlined in this plan.

Strategy 6: Improve the student experience by providing better options and services that are designed to facilitate prompt completion of degree requirements.
Establishing the major in Neuroscience will provide those students who want to study this field with a better option to do so. Prior to establishing the major, students who wanted to study neuroscience had to design their own curriculum through a "Student Designed Major". While this was a viable option in the absence of an official Neuroscience major, the process can be quite tedious. By creating the major we have provided better options and services that help our students graduate with the degree they want.

Strategy 7: Enhance career advising and planning services and integrate them explicitly into academic advising and planning.
Faculty serve as academic advisors and work in consultation with students to develop an appropriate academic plan (including which courses to register for, fulfilling prerequisites and major requirements, and developing post-graduation plans). Additionally, the curriculum will include targeted assignments within NEUR courses that scaffold the development of career and graduate school search strategies, the development of resumes and cover letters, and preparations for networking and interview opportunities. Lastly, the College has committed to supporting our students with what we call the "Honors College Promise". Under this promise "we guarantee every student the opportunity to engage in a research, internship, or international experience". This gives our students valuable experience that can act as a stepping stone to tangible employment after graduation. In preparation for this experience, students also take career exploration courses that give them training in professional development as a part of our core curriculum.

Strategy 9: Strengthen and sustain development and collaboration in addressing teaching and learning challenges.
St. Mary's provides faculty with opportunities for professional development through the Inclusive and Innovative Instruction Teaching Conference, offered each August by our Center for Inclusive Teaching and Learning (CITL). The CITL also supports learning communities, workshops, and other training for instructors throughout the academic year. The College has funds for professional development that faculty may use to improve their teaching effectiveness. In addition, our Assessment Implementation Team is headed by the Coordinator of Transparent Teaching and Assessment; her role explicitly connects assessment to the kinds of intentional, evidence-based strategies that improve teaching practices. As such, the Assessment

Coordinator has tailored her work with faculty to include substantive discussions on ways to respond to assessment data by developing more effective pedagogical strategies.

C. Quantifiable and Reliable Evidence and Documentation of Market Supply and Demand in the Region and State:

Not required for liberal arts colleges.

D. Reasonableness of Program Duplication:

Not required for liberal arts colleges.

E. Relevance to High-demand Programs at Historically Black Institutions (HBIs)

1. Discuss the program's potential impact on the implementation or maintenance of high-demand programs at HBI's.

We do not expect our program to negatively impact Historically Black Institutions (HBIs). Out of the 20 HBIs within 250 miles of St. Mary's College of Maryland, none currently offer a Bachelor's Degree in Neuroscience.

F. Relevance to the identity of Historically Black Institutions (HBIs)

1. Discuss the program's potential impact on the uniqueness and institutional identities and missions of HBIs.

The proposed major will have no impact on the uniqueness, institutional identities, or missions of any Historically Black Institution.

G. Adequacy of Curriculum Design, Program Modality, and Related Learning Outcomes (as outlined in COMAR 13B.02.03.10):

1. Describe how the proposed program was established, and also describe the faculty who will oversee the program.

The Neuroscience major is an expansion of our Neuroscience minor, which was established in 2003. Interest among St. Mary's students in the Neuroscience program has grown steadily since its inception as a minor. The Neuroscience program at SMCM is currently the third largest minor on campus and has been the most productive minor (in number of graduating students) over the past five years among minors that do not also have a corresponding major. On internal surveys, our minors frequently comment on their interest in a Neuroscience major and the need for expanded Neuroscience course offerings (which the major will provide) on the open-ended question "What do you think would improve the overall program?" Additionally, Neuroscience is a common "Student Designed Major" at SMCM. In short, we are establishing the Neuroscience major because there is data showing us that there is a strong and consistent demand for it by students and interest in it by faculty and administration.
The current major curriculum was established by the Neuroscience Steering Committee, in consultation with the Chairs of the programs contributing to the Neuroscience major (Biology, Chemistry and Biochemistry, Philosophy, and Psychology).

Faculty on the steering committee will contribute to the teaching of core Neuroscience courses. Home departments for these faculty members are Biology (one line that is shared with Neuroscience), Chemistry and Biochemistry (one line), and Psychology (three lines dedicated to Psychology and one line that is shared with Neuroscience). Several other faculty who are not members of the Neuroscience Steering Committee offer courses in biochemistry, biology, chemistry, philosophy, and psychology that satisfy upper-level elective requirements of the major. To provide even more support for the program, an additional tenure-track faculty member (shared between Neuroscience and Biology) will be hired to start Fall 2021. All faculty members are full-time, have terminal degrees in their field, and are active researchers. All faculty members participate in the design of the courses that they teach. A breakdown of the faculty overseeing the program is provided below.

Aileen Bailey, PhD, Professor of Psychology
Torry Dennis, PhD, Assistant Professor of Neuroscience and Psychology
Gina Fernandez, PhD, Assistant Professor of Psychology
Sarah Latchney, PhD, Assistant Professor of Neuroscience & Biology
James Mantell, PhD, Associate Professor of Psychology
Pamela Mertz, PhD, Professor of Chemistry & Biochemistry

2. Describe educational objectives and learning outcomes appropriate to the rigor, breadth, and (modality) of the program.

Listed below are the descriptions of the program learning outcomes (PLOs) that guide the curriculum and student experience for the Neuroscience major.

At the completion of the Neuroscience major, students will be able to:

- PLO 1: Explain the key concepts in neuroscience including biochemical interactions, cellular mechanisms, anatomical structures, sensory and perceptual processes, animal behavior, and/or the concept of the mind.
- PLO 2: Identify, locate, and evaluate neuroscience-related primary literature.
- PLO 3: Develop evidence-based arguments related to concepts in neuroscience.
- PLO 4: Design studies using the scientific method to address a problem in neuroscience.
- PLO 5: Use appropriate statistical and methodological approaches to analyze data.
- PLO 6: Construct an organized written product that conveys scientific information at a level appropriate to the audience.
- PLO 7: Effectively orally communicate research ideas to a cross-disciplinary audience.
- PLO 8: Work collaboratively with other students and faculty members on classwork and in the laboratory.

We believe that these PLOs will give our students the appropriate foundations in neuroscience, but will also develop the skills necessary to be successful after graduation. A proficiency in content is important, but the development of critical thinking skills, information literacy, analytical methods, oral communication, written communication, and skills in collaboration will prepare them to be successful lifelong learners.

3. Explain how the institution will:

    a) provide for assessment of student achievement of learning outcomes in the program

St. Mary's College of Maryland has a three-year assessment cycle for institutional as well as programmatic learning outcomes. The assessment cycle of programmatic learning will necessarily include this new major. Programmatic assessment at St. Mary's is organized by the Department Chair in consultation with the Assessment Implementation Team and the Coordinator of Transparent Teaching and Assessment, who helps departments conduct curricular mapping that links course-level outcomes to programmatic outcomes. At the end of each assessment period, a report is developed by the program reflecting on what was learned through the assessment process and how this information will be used to improve the program moving forward.

    b) document student achievement of learning outcomes in the program

Currently, assessment data generated by programmatic assessment cycles are logged into AEFIS, an assessment software package. Faculty members evaluate students' achievement via a designated course artifact and assessment instrument, such as a rubric. These data provide faculty with information about student performance that can inform the future iterations of their classes. At the same time, by entering these data into AEFIS, programs can track the percentage of students in a given course who have met (or not met) a course learning outcome; taken together, data from course learning outcomes linked to a program learning outcome tells us how many students have met the program learning outcome. The Assessment Implementation Team, with the support of the Provost's Office, works with faculty members and chairs to make sure that these achievements are documented.

4. Provide a list of courses with title, semester credit hours and course descriptions, along with a description of program requirements.

Program Requirements

General College Requirements

All St. Mary's College students complete the following as part of their Foundational Study for LEAD:

Core Seminar

New students practice skills of inquiry and communication by completing:
CORE101 or CORE301 (4 credits)

Core Knowledge and Methods

Students extend their breadth of learning and experience the importance of cultural literacy by completing:
Language Requirement
(4 credits)

Core Exploration (6 courses, one each from the following areas: Arts, Cultural Literacy, Humanities, Mathematics, Natural Sciences (with Lab), and Social and Behavioral Sciences) or **Core Inquiry** (4-5 thematically integrated courses that meet outcomes in all six Core Exploration areas)
(17-25 credits)

Professional Pathway

Students establish connections between academic and career preparation by completing:

CORE-P101, CORE-P102, and CORE-P201
(4 credits)

Total Credits for LEAD: 29-37

Neuroscience Major Required Courses (30 Credits)	**Credits**
● BIOL 105: Principles of Biology I	4
● BIOL 105L: Principles of Biology I Lab	1
● BIOL 106: Principles of Biology II	4
● BIOL 106L: Principles of Biology II Lab	1
● CHEM 103: General Chemistry I	4
● CHEM 106: General Chemistry II *(Must co-enroll in CHEM 106L)*	4
● NEUR 201: Introduction to Neuroscience	4
● NEUR 310: Special Topics in Neuroscience	4
● PSYC 101: Introduction to Psychology	4
Required Statistics Course(s): (4-8 credits)	**Credits**
● BIOL 311: Biostatistics *(Must co-enroll in BIOL 311L)*	4
OR	
● PSYC 204: Psychological Research, Analysis, and Writing I	4
● PSYC 206: Psychological Research, Analysis, and Writing II	4
Elective courses: (12 credits). Electives must originate from at least two disciplines (BIOL, CHEM, NEUR, PHIL, PSYC). At least two courses must have a laboratory component.	**Credits**
● BIOL 305: Animal Behavior *(Must co-enroll in BIOL 305L)*	4
● BIOL 330: Human Anatomy and Physiology *(Must co-enroll in BIOL 330L)*	4
● BIOL 380: Topics in Biology*	2-4
● BIOL 387: Sensory Biology *(Must co-enroll in BIOL 387L)*	4
● BIOL 419: Neurobiology *(Must co-enroll in BIOL 419L)*	4
● BIOL 436: Comparative Animal Physiology *(Must co-enroll in BIOL 436L)*	4
● BIOL 438: Cancer Cell Biology *(Must co-enroll in BIOL 438L)*	4
● CHEM 420: Bi ochemistry I *(Must co-enroll in CHEM 420L)*	4
● CHEM 425/BIOL 425: Biochemistry II	4
● CHEM 480: Topics in Chemistry*	2-4

● NEUR 302: Neuroscience Research and Seminar	4
● PHIL 382: Meditation and the Mind	4
● PSYC 314: Drugs, Brains, and Behavior	4
● PSYC 322: Biological Psychology *(Must co-enroll in PSYC 322L)*	4
● PSYC 326: Perception *(Must co-enroll in PSYC 326L)*	4
● PSYC 484: Special Topics in Biological Psychology*	4
Required Capstone Experience (St. Mary's Project): (8 credits)	**Credits**
● NEUR 493: St. Mary's Project *(Will accept a project in any discipline)*	4
● NEUR 494: St. Mary's Project *(Will accept a project in any discipline)*	4

** Each Topics course must be approved by the Neuroscience program for content relevance.*

Total Credits for Neuroscience Major: 54-58
Total Credits Required for Graduation: 128

Course Descriptions: Neuroscience Major Required Courses

BIOL 105. Principles of Biology I (4 Credits)
An introductory course on the organization and function of cells. Topics include biological chemistry, cell structure, membranes, metabolism, and fundamental molecular genetics. This course and BIOL 105L together satisfy the Core Curriculum requirement in Natural Sciences with Laboratory. *Co-requisite: BIOL 105L*.

BIOL 105L. Principles of Biology Lab I (1 credit)
A laboratory course to accompany Principles of Biology I. Topics include microscopy, spectrophotometry, enzymology, and microbiology. Students will design and execute their own experiments, then present their results orally and in writing. *Co-requisite: BIOL 105*.

BIOL 106. Principles of Biology II (4 credits)
An introductory course on the structure, function, and diversity of plants and animals, with evolution as the unifying theme. Particular emphasis will be given to organisms' interactions with and adaptations to their environment. *Prerequisite: BIOL 105, BIOL 105L*, *Co-requisite: BIOL 106L*.

BIOL 106L. Principles of Biology II Lab (1 credit)
A laboratory course to accompany Principles of Biology II. Topics include plant and animal diversity as they relate to structure, function, adaptation and fundamental principles of evolution. Students will design and execute a series of their own experiments, then present their results orally and in writing. *Prerequisite: BIOL 105, BIOL 105L. Co-requisite: BIOL 106*.

CHEM 103. General Chemistry I (4 credits)
The fundamental principles and concepts of chemistry, including atomic structure, chemical periodicity, ionic and covalent bonding, molecular structure, stoichiometry, inorganic nomenclature, gases liquid and solids. Lecture and Computation Lab.

CHEM 106. General Chemistry II (4 credits)
The fundamental principles and concepts of chemistry, including molecular orbital theory, kinetic molecular theory of gasses, properties of solutions, chemical thermodynamics, chemical equilibrium, acid and base equilibrium, electrochemistry, chemical kinetics and electrochemistry. Lecture and laboratory. This course satisfies the Core Curriculum requirement in Natural Sciences with Laboratory. *Prerequisite: CHEM 103 with a grade of C or a 4 or 5 on the AP chemistry exam.*

NEUR 201. Introduction to Neuroscience. (4 credits)
This interdisciplinary course will introduce students to the study of neuroscience. Students will learn how the anatomy and function of the brain and nervous system underlie thought and behavior. Students will also be exposed to the methods used to study the brain and will gain proficiency in analyzing scientific literature and communicating scientific ideas. *Prerequisite or co-requisite(s): CHEM 106 and PSYC 101 with a grade of C or better.*

NEUR 310. Special Topics in Neuroscience. (4 credits)
Students will focus on an issue of importance to neuroscience. Students will read primary literature and lead discussions related to the primary topic. Topics will reflect the interdisciplinary nature of neuroscience and demonstrate multiple levels of analysis (physiological, pharmacological, and behavioral). Potential topics include Consciousness, Auditory Neuroscience, Neurobiology of Disease, Neural Plasticity and Learning, and Neurobiology of Communication. The specific topic will vary by semester. This course may be repeated for credit where the topic is not repetitive. *Prerequisite: NEUR 201 with a grade of C or better, or permission of the instructor.*

PSYC 101. Introduction to Psychology (4 credits)
A survey of the theoretical and empirical foundations of contemporary psychology. This course satisfies the Core Curriculum requirement in Social Sciences.

Course Descriptions: Required Statistics Course(s)

BIOL 311. Biostatistics (4 credits)
This course is an overview or introduction of statistical methods applied to biology and builds on the basic statistics taught very generally in the four core courses of the biology curriculum. After an introduction to data, probability, and sampling distributions, statistical inference and hypothesis testing will be covered. We will examine a variety of statistical tests, including one- and two-sample tests, correlation and regression analyses, multinomial tests, analysis of

variance, and nonparametric tests. Among the natural sciences, biological data can present particular challenges, such as a high amount of variability, as well as spatial and temporal correlation problems. We will discuss how to identify and mitigate these issues. Students should be prepared to work independently and in small groups on assignments and homework. Students will use statistical software to perform analyses and learn how to apply their statistical knowledge to their own research projects. Lecture and laboratory. *Prerequisite: BIOL 106 and BIOL 106L.*

PSYC 204. Psychological Research, Analysis, and Writing I (4 credits)
The first course in a two-course sequence to enhance knowledge of various research designs and data analyses, sharpen digital literacy skills and capabilities for critical thinking, and develop professional written and oral communication skills. This course covers research ethics, descriptive and correlational research design, data collection, qualitative analyses, and quantitative analyses that are conducted with statistical software. Students will learn foundational skills in the design, analysis, evaluation, and communication of psychological research. *Prerequisite: PSYC 101 with a grade of C- or better or with permission of the department chair*.

PSYC 206. Psychological Research, Analysis, and Writing II (4 credits)
The second course in a two-course sequence to enhance knowledge of various research designs and data analyses, sharpen digital literacy skills and capabilities for critical thinking, and develop professional written and oral communication skills. This course reviews critical concepts from PSYC 204 and expands coverage to experimental design with data collection and quantitative analyses that are conducted with statistical software. Students will learn foundational skills in the design, analysis, evaluation, and communication of psychological research. This course serves as the prerequisite for 300-level psychology laboratory courses. *Prerequisite: PSYC 204 with a grade of C- or better or with permission of the department chair*.

Course Descriptions: Elective Courses

BIOL 305. Animal Behavior (4 credits)
An examination of principles and methods of the study of animal behavior based on ethology, comparative psychology, and neurobiology. Topics include methods, evolution, genetic control, learning, physiology of the senses and nervous system, orientation and migration, biological rhythms, communication, and sociobiology. Lecture and laboratory. *Prerequisite: BIOL 271, BIOL 271L.*

BIOL 330. Human Anatomy and Physiology (4 credits)
A comprehensive and integrated overview of the structure and function of organs and organ systems of the human body. This course is specifically designed to provide a strong foundation of knowledge for students planning a career in the health sciences. Lecture and laboratory. *Prerequisites: BIOL 105, BIOL 105L, BIOL 106, BIOL 106L, or consent of instructor.*

BIOL 380. Topics in Biology (2-4 credits)
An investigation of a specialized area of biology not normally covered in the biology curriculum. Topics will be selected by the biology faculty according to student interest. Students are encouraged to suggest topics for this course. May be repeated for credit if the topic is not repetitive. Lecture, or lecture and laboratory. Taught according to student demand and staff availability. Topics in Biology also includes graduate seminars (ecology, toxicology, fisheries, and environmental chemistry) taught annually at Chesapeake Biological Laboratory, and St. Mary's students may attend these courses under the College's cooperative agreement with the University of Maryland. Some topics may have prerequisites.

BIOL 387. Sensory Biology (4 credits)
One of the key characteristics of life is the ability to react to environmental stimuli. Sensory biologists seek to understand how organisms interface with signals, transduce the information into neural codes, interpret this neural input and initiate appropriate behavioral responses. We will explore sensory systems at the molecular, cellular and neurophysiological levels using prokaryote, invertebrate and vertebrate models. Evolutionary and comparative contexts will be used to review a broad spectrum of sensory modalities (e.g., mechanosenses). Lecture and laboratory. *Prerequisite: BIOL 106 and BIOL 106L, or NEUR 201.*

BIOL 419. Neurobiology (4 credits)
This course will offer students an introduction to the basic concepts in neurobiology. The content will range from molecular and cellular biology of the neuron and brain systems, to comparative neuroanatomy and brain development, to behavior. Integrated topics will include drugs of abuse, methods and drugs used in research, and the genetics and animal models of neurological disease. Learning will take place through lectures, demonstrations, laboratory exercises, discussions of outside readings and student presentations. Lecture and laboratory. *Prerequisite: BIOL 106, BIOL 106L.*

BIOL 436. Comparative Animal Physiology (4 credits)
The study of animal function, especially as it is related to survival in the organism's natural environment. Animal functions at the level of the whole organism, the organ system, and the cell are discussed. Lecture and laboratory. *Prerequisites: BIOL 106, BIOL 106L, CHEM 106; PHYS 122, or PHYS 142, or PHYS 152 recommended*.

BIOL 438. Cancer Cell Biology (4 credits)
An examination of the fundamental life processes occurring within cells. The cellular and molecular basis of life is discussed, with emphasis on how dysfunction of cellular processes leads to cancer. Topics include apoptosis, growth and replication, cytoskeletal and organelle structure and function, motility and adhesion, signaling and second-messenger systems, angiogenesis and various cancer treatments. Lecture and laboratory. *Prerequisite: BIOL 270, BIOL 270L. CHEM 420 recommended.*

CHEM 420. Biochemistry I (4 credits)
The chemistry of biological systems with emphasis on the relationship of molecular structure to biological function. Lecture and laboratory. *Prerequisite: CHEM 312 with a grade of C- or better.*

CHEM 425. Biochemistry II (4 credits)
A continuation of the material covered in CHEM 420 with an emphasis on metabolic processes. Lecture only. This course is cross-listed as BIOL 425. Students may receive credit for either course but not both. *Prerequisite: CHEM 420 with a grade of C- or better.*

CHEM 480. Topics in Chemistry (2-4 credits)
A thorough investigation of a specialized area of chemistry. Topics are selected by the faculty according to student interest. Course may be repeated for credit if the topic is not repetitive. *Prerequisite: Topics prerequisites will be listed on a case by case basis.*

NEUR 302. Neuroscience Research and Seminar. (4 credits)
Students will gain hands-on laboratory experience by working in small groups to conduct research. All students will write a formal research report of their work, including a literature review, methods, results, and discussion. Students will also learn how to create an effective oral research presentation. *Prerequisite: NEUR 201 with a grade of C or better, or permission of the instructor.*

PHIL 382. Meditation and the Mind (4 credits)
This course will explore the practice of meditation, with special attention being paid to its effects on cognition, affectivity, neurobiology, etc., and what these changes ultimately tell us about the mind. We will investigate meditation from the standpoints of first-hand practice, classical Asian and East Asian religio-philosophical texts, phenomenology, and via relevant contemporary empirical research in the brain sciences. Topics will include: focused awareness vs. open presence vs. affective meditational approaches; the cognitive, emotional, moral, and existential effects of meditative experience; contemplative education; the use of meditation in prison, and the metaphysical issues associated with questions of consciousness. Each seminar meeting will begin with a 20-30 min. meditation practice, for which a meditation pillow, or zafu, is required.

PSYC 314. Drugs, Brains, and Behavior (4 credits)
An examination of recreational and therapeutic drugs that act on the brain. Topics include the biology of the drug's effects on the brain; drug effects on behavior; and the use of psychoactive drugs in the treatment of psychopathology. *Prerequisite: PSYC 101 or consent of the instructor.*

PSYC 322. Biological Psychology with Laboratory (4 credits)
The experimental analysis of functional neuroanatomy and brain-behavior interactions in humans and non-humans, including the physiological basis of complex behaviors, including sleep, stress, learning and memory, sexual and emotional behavior, and neuropsychiatric disorders. Emphasis on aspects of experimental design, research methodologies, and data analysis and interpretation within the field. Lecture and laboratory. *Prerequisite: PSYC235 with*

a grade of C- or better and PSYC 303 with a grade of C- or better.

PSYC 326. Perception with Laboratory (4 credits)
An examination of the psychological and neuroscientific theories, models, and experimental methods in the study of perception. Coverage emphasizes the visual and auditory systems but content in other modalities such as tactile, haptic, and pain perception, vestibular sensation, gustation, olfaction, and enhanced or modified senses may be included. *Prerequisites: PSYC 235 with a grade of C- or better and PSYC 303 with a grade of C- or better or PSYC 203 with a grade of C- or better.*

PSYC 484. Special Topics in Biological Psychology (4 credits)
An in-depth examination of a particular topic in biological psychology. Examples include: Neurobiology of Learning and Memory; Neurobiology of Disease; Evolutionary Psychology. May be repeated for credit if topics are different. *Prerequisite: PSYC 235.*

Course Descriptions: Required Capstone Experience

NEUR 493/494. St. Mary's Project. (1-8 credits)
The capstone project, which may take many forms, draws on and extends knowledge, skills of analysis, and creative achievement developed through previous academic work. In consultation with faculty, the student identifies an area to be explored and proposes a method of inquiry appropriate to the topic. The project should include a reflection on the body of literature or the conceptual framework to which it is a contribution. Some component of the project must be shared with the College community through posters, presentations, or other means. This requirement may be satisfied by completing eight credit hours of the St. Mary's Project in any discipline or cross-disciplinary study area. The project is supervised by a faculty mentor, appointed by the program chair. This course is repeatable for up to a total of 4 credit hours for NEUR 493 and 4 credit hours for NEUR 494. *Prerequisite: NEUR 201 with a grade of C or better; PSYC 206 or BIOL 311 with a grade of C or better; Approval of faculty mentor and program chair of the student's major(s). Consult faculty mentor for project guidelines.*

Below is a suggested sequence of study that will satisfy the major discipline area in Neuroscience.

First Year

Fall	Spring
BIOL 105	BIOL 106
BIOL 105L	BIOL 106L
CHEM 103	CHEM 106
PSYC 101	CHEM 106L

1 Core Course	2 Core Courses

Second Year

Fall	Spring
BIOL 270 & BIOL 270L (optional)	BIOL 271 & BIOL 271L (optional)
PSYC 204 or BIOL 311	PSYC 206 (if they took PSYC 204)
2 Core Courses	NEUR 201
	1 Core Course

Third Year

Fall	Spring
NEUR 302 (optional)	NEUR 310
Upper-Level Elective	Upper-Level Elective
2 Core or Elective Courses	2 Core or Elective Courses

Fourth Year

Fall	Spring
SMP: In Any Discipline	SMP: In Any Discipline
3 Core or Elective Courses	3 Core or Elective Courses

5. Discuss how general education requirements will be met, if applicable.

The program will be subject to the general graduation requirements of St. Mary's College of Maryland for the bachelor of science degree, as published in the course catalog (http://www.smcm.edu/catalog). These are as follows:

- The completion of at least **128 credit hours (credits), including at least 44 credit hours of upper-level (300- and 400-level) courses, with a cumulative grade-point average of at least 2.00,** both on an overall basis and in those courses that meet major requirements.
- At least 30 of the last 36 credit hours of academic work toward the degree at St. Mary's College must be completed by credits earned from St. Mary's College courses. With the permission of the Academic Policy Committee, this provision may be waived for students engaged in departmentally approved off-campus learning experiences.
- The LEAD Curriculum Foundational Study requirements (see summary above or table below).

LEAD Foundational Study Requirement	Courses Available to Fulfill Requirement	Credits
Core Seminars	• CORE 101 or CORE 301	4
Language Requirement	• Any College-level language course at 102/110 level or higher.	3-4
Professional Pathway	Students must complete <u>each</u> of the following courses. • CORE-P101 (1 credit) • CORE-P102 (1 credit) • CORE-P201 (2-4 credits)	Variable (See cell to the left)
Core Knowledge and Methods <u>Option #1</u>: Core Exploration	Core Exploration: *Arts* Choose <u>one</u> of the courses below to fulfill the Arts requirement of Core Exploration. • ART 204: Introduction to Drawing • ART 206: Introduction to Painting • ART 208: Introduction to Sculpture • ART 212: Introduction to Photography • ART 214: Introduction to Digital Art • ART 233: Topics in Studio Art • ART 239: Painting and Drawing from Life • ART 269: Community Arts • ARTH 220: Rock, Paper, Sword: The Media of the Ancient and Medieval World • ARTH 250: Topics in Western Art History • ENGL 106: Introduction to Literature • ENGL 130: Literary Topics • ENGL 270: Creative Writing • ENGL 281: Literature in History I • ENGL 282: Literature in History II • ENGL 283: Literature in History III • HIST 264: Introduction to Museum Studies • MUSC 112: Music as Communication • MUSC 203: Music Theory I (3) • MUSC 205: The Story of Music • MUSC 217: The Jazz Makers • MUSC 221: Topics in Music History • MUST 200: Introduction to Museum Studies • TFMS 106: Introduction to Dramatic Literature	4 each

	● TFMS 130: Introduction to Performance ● TFMS 170: Stagecraft ● TFMS 171. Elements of Theatrical Design ● TFMS 200: Theater in History ● TFMS 220: Introduction to Film and Media Studies ● TFMS 221: Film and Media Production Modes ● TFMS 225: Topics in Film and Media ● TFMS 228: Media Production I ● TFMS 230: Acting I ● TFMS232: Voice and Speech for the Actor ● TFMS 234: Acting for the Camera ● TFMS 250: Movement I ● TFMS 255: Modern Dance I ● TFMS 258: Dance in History ● TFMS 260: Topics in Dance/Movement ● TFMS 275: Costumes and Clothes in History ● TFMS 280: Topics in Production Core Exploration: *Cultural Perspectives* Choose <u>one</u> of the courses below to fulfill the Cultural Perspectives requirement of Core Exploration. ● AADS 214: Africa and the African Diaspora ● ANTH 150: Gambian Languages and Cultures ● ANTH 230: Cultural Anthropology ● ANTH 250: Language and Culture ● ARTH 224: Ancient American Art and Architecture ● ARTH 255: Topics in Global Art History ● ASIA 200: Introduction to Asian Studies ● ENGL 235: Topics in Literature and Culture ● HIST 253: Latin American Civilization ● HIST 268: Russian Civilization ● HIST 280: Africa and the African Diaspora ● ILAS 210: Latin American Cultural Studies ● ILAS 206: Introduction to Latin American Literature in Translation ● ILC/LNG102, 201, 202, 205, 206, or 260 courses, if they are not used to fulfill the language requirement. ● ILCT106: Introduction to World Literature ● MUSC 216: Introduction to the World's Music ● MUSC 223: Topics in Ethnomusicology ● POSC 252: Comparative Politics ● POSC 269: International Politics	

	● RELG 221: Islamic Civilizations ● RELG 231: Religions of Ancient India ● RELG232: Religions of Modern India ● TFMS 210: Japanese Performance Traditions ● TFMS 251: Introduction to Traditional African Dance Core Exploration: *Humanistic Foundations* Choose <u>one</u> of the courses below to fulfill the Humanistic Foundations requirement of Core Exploration. ● ARTH 100: Introduction to Art History ● HIST 104: Historical Foundations of the Modern World to 1450 ● HIST 105: Western Civilization ● HIST 108: History of the Modern World ● HIST 200: United States History, 1776-1980 ● HIST 206: East Asian Civilization ● HIST 219: Colonial American Survey ● HIST 272: Ancient Mediterranean ● HIST 274: Europe, 1815-1914 ● HIST 276: Twentieth Century World ● PHIL 101: Introduction to Philosophy ● PHIL 120: Introduction to Ethics ● RELG 110: Introduction to the Study of Religions ● RELG 210: Biblical Foundations ● RELG 211: Speaking of God: Introduction to Theology ● RELG 220: Introduction to Islam ● WGSX 220: Introduction to Women, Gender, and Sexuality Studies Core Exploration: *Mathematics* Choose <u>one</u> of the courses below to fulfill the Mathematics requirement of Core Exploration. ● COSC 120: Introduction to Computer Science ● MATH 131: Survey of Mathematics ● MATH 151: Calculus I ● MATH 152: Calculus II ● MATH 200: Discrete Mathematics ● MATH 255: Vector Calculus ● MATH 256: Linear Algebra ● MATH 281: Foundations of Mathematics Core Exploration: *Natural Sciences with Laboratory*	

	Choose <u>one</u> of the courses below to fulfill the Natural Sciences with Laboratory requirement of Core Exploration ● ASTR 154: Solar System Astronomy ● ASTR 155: Stellar Astronomy and Cosmology ● BIOL 101: Contemporary Bioscience with Laboratory ● BIOL 105 and BIOL105L: Principles of Biology I and Laboratory ● CHEM 101. Contemporary Chemistry with Laboratory ● CHEM 106: General Chemistry II ● GEOL 130: Introduction to Geology ● PHYS 104: Basic Physics with Laboratory ● PHYS 121: College Physics I ● PHYS 141: General Physics I ● PHYS 142: General Physics II ● PHYS 151: Fundamentals of Physics I ● PHYS 152: Fundamentals of Physics II ● PHYS 251: Fundamentals of Physics III Core Exploration: *Social Sciences* Choose <u>one</u> of the courses below to fulfill the Social Sciences requirement of Core Exploration ● ECON 102: Principles of Microeconomics ● ECON 103: Principles of Macroeconomics ● POSC 100: Introduction to Politics ● PSYC 101: Introduction to Psychology ● SOCI 101: Introduction to Sociology	
Core Knowledge and Methods <u>Option #2</u>: Core Inquiry	Core Inquiries are designed as groupings of thematically-linked courses taught over multiple semesters. In order to satisfy certain learning objectives (as opposed to a standard number of credits), Inquiries may be comprised of four courses, four courses plus a stand-alone requirement (such as a math or language course), or 5 courses. Current inquiry themes include Justice, Climate, and the Idea of the West.	Credits vary. See cell to the left for more details.

- The LEAD Curriculum Advanced Study requirements, which include:
    - Academic Major
    - Capstone Experience.

6. Identify any specialized accreditation or graduate certification requirements for this program and its students.

Not applicable.

7. If contracting with another institution or non-collegiate organization, provide a copy of the written contract.

Not applicable.

8. Provide assurance and any appropriate evidence that the proposed program will provide students with clear, complete, and timely information on the curriculum, course and degree requirements, nature of faculty/student interaction, assumptions about technology competence and skills, technical equipment requirements, learning management system, availability of academic support services and financial aid resources, and costs and payment policies.

Course and degree requirements will be published in the course catalog and on the College website; students also have access to major checklists that help them track completion of their major. St. Mary's College of Maryland publishes information on its website on the nature of faculty/student interaction, assumptions about technology competence and skills, technical equipment requirements, learning management system, availability of academic support services and financial aid resources, and costs and payment policies. It also communicates this information by email, hard copy mailing, and through advising appointments. Each student is assigned a faculty advisor.

9. Provide assurance and any appropriate evidence that advertising, recruiting, and admissions materials will clearly and accurately represent the proposed program and the services available.

As with all of its programs, St. Mary's College of Maryland will ensure that advertising, recruiting, and admissions materials will clearly and accurately represent the proposed program and the services available.

H. Adequacy of Articulation

1. If applicable, discuss how the program supports articulation with programs at partner institutions. Provide all relevant articulation agreements.

N/A

I. Adequacy of Faculty Resources (as outlined in COMAR 13B.02.03.11).

1. Provide a brief narrative demonstrating the quality of program faculty. Include a summary list of **faculty with appointment type, terminal degree title and field, academic title/rank, status (full-time, part-time, adjunct) and the course(s) each faculty member will teach in the proposed program.**

Faculty contributing to our Neuroscience program are distributed across many disciplines, including Biology, Biochemistry/Chemistry, Neuroscience, Philosophy, and Psychology. Our faculty are active researchers in their field who incorporate students into the research process. Below is a list of faculty teaching courses that contribute to the proposed program.

Biology Faculty

- Dr. Emily Brownlee, Ph.D in Biological Oceanography, Assistant Professor of Biology, Full-time.
    - Courses: BIOL 106L: Principles of Biology II Lab

- Dr. Jeffrey Byrd, Ph.D. in Microbiology, Professor of Biology, Full-time.
    - Courses: BIOL 105: Principles of Biology I, BIOL 105L: Principles of Biology I Lab

- Dr. Karen Crawford, Ph.D. in Anatomy, Professor of Biology, Full-time.
    - Course: BIOL 330: Human Anatomy and Physiology

- Dr. Samantha Elliott, Ph.D. in Immunology, Associate Professor of Biology, Director of the Center for Inclusive Teaching and Learning, Part-time.
    - Course: BIOL 438: Cancer Cell Biology

- Dr. Kevin Emerson, Ph.D. in Evolutionary Genetics, Associate Professor of Biology, Full-time.
    - Course: BIOL 311: Biostatistics

- Dr. Sarah Latchney, Ph.D. in Toxicology, Assistant Professor of Neuroscience and Biology, Full-time.
    - Courses: BIOL 105: Principles of Biology I, BIOL 105L: Principles of Biology I Lab, NEUR 201: Introduction to Neuroscience, NEUR 310: Special Topics in Neuroscience, BIOL 419: Neurobiology, NEUR 302: Neuroscience Research and Seminar, NEUR 493: St. Mary's Project, NEUR 494: St. Mary's Project

- Dr. Jessica Malisch, Ph.D. in Biology, Assistant Professor of Physiology and Director of the Office of Research and Epidemiology at St. Mary's County Health Department, Part-Time.

    - Courses: BIOL 106: Principles of Biology II, BIOL 106L: Principles of Biology II Lab, BIOL 380: Topics in Biology, BIOL 436: Comparative Animal Physiology, BIOL 387: Sensory Biology

- Dr. Jordan Price, Ph.D. in Biology, Professor of Biology, Full-time.
    - Course: BIOL 305: Animal Behavior

Biochemistry/Chemistry Faculty

- Dr. Geoffrey Bowers, Ph.D. in Chemistry, Assistant Professor of Chemistry, Full-time.
    - Courses: CHEM 106: General Chemistry II

- Dr. Randolph Larsen, Ph.D. in Marine Estuarine and Environmental Science, Professor of Chemistry, Full-time.
    - Courses: CHEM 480: Topics in Chemistry, CHEM 103: General Chemistry I

- Dr. Pamela Mertz, Ph.D. in Biochemistry, Professor of Chemistry and Biochemistry, Full-time.
    - Course: CHEM 425/BIOL 425: Biochemistry II

- Dr. Kelly Neiles, Ph.D. in Chemical Education, Associate Professor of Chemistry, Full-time.
    - Course: CHEM 103: General Chemistry I, CHEM 106: General Chemistry II

- Dr. Shanen Sherrer, Ph.D. in Biochemistry, Assistant Professor Biochemistry, Full-time.
    - Courses: CHEM 106: General Chemistry II, CHEM 420: Biochemistry I

Philosophy Faculty

- Dr. Barrett Emerick, Ph.D. in Philosophy, Associate Professor of Philosophy, Full-time
    - Course: PHIL 382: Meditation and the Mind

Psychology Faculty

- Dr. Aileen Bailey, Ph.D. in Biological Psychology, Professor of Psychology, Full-time
    - Courses: PSYC 204: Psychological Research, Analysis, and Writing I, PSYC 206: Psychological Research, Analysis, and Writing II, PSYC 314: Drugs, Brains, and Behavior, PSYC 322: Biological Psychology, PSYC 484: Special Topics in Biological Psychology

- Dr. Torry Dennis, Ph.D. in Experimental Psychology, Assistant Professor of Neuroscience and Psychology, Full-time.
    - Courses: NEUR 201: Introduction to Neuroscience, NEUR 310: Special Topics in Neuroscience, NEUR 302: Neuroscience Research and Seminar, PSYC 314:

Drugs, Brains, and Behavior, PSYC 322: Biological Psychology, NEUR 493: St. Mary's Project, NEUR 494: St. Mary's Project

- Dr. Gina Fernandez, Ph.D. in Psychology, Assistant Professor of Psychology, Full-time.
    - Courses: PSYC 204: Psychological Research, Analysis, and Writing I, PSYC 206: Psychological Research, Analysis, and Writing II, PSYC 314: Drugs, Brains, and Behavior, PSYC 322: Biological Psychology, PSYC 484: Special Topics in Biological Psychology

- Dr. Gili Freedman, Ph.D in Social and Personality Psychology, Assistant Professor of Psychology, Full-time.
    - Course: PSYC 101: Introduction to Psychology

- Dr. James Mantell, Ph.D. in Cognitive Psychology, Associate Professor of Psychology, Full-time.
    - Courses: PSYC 204: Psychological Research, Analysis, and Writing I, PSYC 206: Psychological Research, Analysis, and Writing II,PSYC 326: Perception with Laboratory

- Dr. Scott Mirable, Ph.D. in Psychology, Associate Professor of Psychology, Full-time.
    - Course: PSYC 101: Introduction to Psychology

2. Demonstrate how the institution will provide ongoing pedagogy training for faculty in evidenced-based best practices, including training in:
    a) Pedagogy that meets the needs of the students

This was described in our addressing of *strategy 9* of the State Plan in section B, but is included here as well. St. Mary's provides faculty with opportunities for professional development through the Inclusive and Innovative Instruction Teaching Conference, offered each August by our CITL. The CITL also supports learning communities, workshops, and other training for instructors throughout the academic year. The College has funds for professional development that faculty may use to improve their teaching effectiveness. In addition, our Assessment Implementation Team is headed by the Coordinator of Transparent Teaching and Assessment; her role explicitly connects assessment to the kinds of intentional, evidence-based strategies that improve teaching practices. As such, the Assessment Coordinator has tailored her work with faculty to include substantive discussions on ways to respond to assessment data by developing more effective pedagogical strategies.

b) The learning management system

St. Mary's utilizes Blackboard. The Office of Information Technology includes a position for an instructional technologist who trains new faculty on Blackboard and other technology-based tools for teaching. This position also provides support for faculty when they have questions about Blackboard and other such tools.

c) Evidenced-based best practices for distance education, if distance education is offered.

Distance education is not applicable to this program; however, programs that offer online courses work with the CITL and the Office of Information Technology to develop appropriate structures for online courses. COVID-19 Addendum: As the COVID-19 pandemic developed, our CITL was quick to develop workshops that covered best practices in remote learning from both a pedagogical and technological standpoint.

J. Adequacy of Library Resources (as outlined in COMAR 13B.02.03.12)**.**

1. Describe the library resources available and/or the measures to be taken to ensure resources are adequate to support the proposed program.

The St. Mary's College of Maryland Library is the largest academic library in the Southern Maryland region. Our physical collection includes over 130,000 books, periodicals, and DVDs as well as over 100 online research databases and over 160,000 e-books, online journals, and streaming video files. Online materials are available to St. Mary's students, faculty, and staff from anywhere in the world 24/7. The St. Mary's College of Maryland Library is part of the University System of Maryland and Affiliated Institutions (USMAI) Library Consortium, a statewide consortium of 16 campuses, allowing for the sharing of research collections statewide. Direct borrowing through USMAI is supplemented by interlibrary loan and document delivery. In addition to developing, organizing, and making available the library's scholarly resources, librarians work with program faculty to develop information literacy outcomes in courses. Information literacy is infused throughout the College curriculum's foundational studies. Regarding neuroscience specifically, a survey of current library holdings found 80 journals that apply to the field.

K. Adequacy of Physical Facilities, Infrastructure and Instructional Equipment (as outlined in COMAR 13B.02.03.13)

1. Provide an assurance that physical facilities, infrastructure and instruction equipment are adequate to initiate the program, particularly as related to spaces for classrooms, staff and faculty offices, and laboratories for studies in the technologies and sciences.

Physical infrastructure

Because the major is being established with largely existing courses and faculty, there is sufficient classroom space for the new courses and sufficient office space and research space for the new faculty hire.

Instructional Materials

In general, the load on the College instructional infrastructure would be equivalent to the addition of one new faculty member in the sciences and could be handled through normal channels. The addition of the new courses in the major will require small increases in the instructional budget for the Neuroscience program, mostly for laboratory supplies. Still, the expected impact is minimal.

Support Staff

Neuroscience faculty already work with multiple staff members that support building operations, instructional support, laboratory management, and resource management. We do not envision the need to expand on our existing clerical and laboratory support staff to meet the needs of the Neuroscience major.

2. Provide assurance and any appropriate evidence that the institution will ensure students enrolled in and faculty teaching in distance education will have adequate access to:

a) An institutional electronic mailing system, and

All SMCM instructors and students are issued SMCM email addresses. However, we do not anticipate this major will be taught through distance education.

b) A learning management system that provides the necessary technological support for distance education

St. Mary's utilizes Blackboard as well as a range of Google applications (including for email). However, we do not anticipate this program being taught through distance education. COVID-19 Addendum: In light of COVID-19, St. Mary's has invested heavily in technology to deliver a high-quality education in a synchronous, hybrid format (where students can join in the physical classroom or join "live" remotely). In order to do this, we have invested in hardware and

software for classroom spaces, including cameras, boom microphones, lapel microphones, expanded WiFi, and media switching stations to allow students joining remotely to hear and see those in the physical classroom, and for the in-person class to hear and see those who are joining remotely (via an Institutional Zoom account). While we don't anticipate this program being taught through distance education after COVID, we are now fully equipped to do so.

L. Adequacy of Financial Resources with Documentation (as outlined in COMAR 13B.02.03.14)

1. Complete **Table 1: Resources and Narrative Rationale**. Provide finance data for the first five years of program implementation. Enter figures into each cell and provide a total for each year. Also provide a narrative rationale for each resource category. If resources have been or will be reallocated to support the proposed program, briefly discuss the sources of those funds.

Table 1. Program Resources

Resource Categories	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
1. Reallocated Funds	0	0	0	0	0
2. Tuition/Fee Revenue (c + g)	$226,860	$274,950	$308,560	$311,640	$393,450
a. Number of F/T students	15	18	20	20	25
b. Annual tuition/fee rate	$15,124	$15,275	$15,428	$15,582	$15,738
c. Total F/T revenue (a x b)	$226,860	$274,950	$308,560	$311,640	$393,450
d. Number of P/T students	0	0	0	0	0
e. Credit Hour Rate	$200	$200	$200	$200	$200
f. Annual Credit Hour Rate	0	0	0	0	0
g. Total P/T revenue (d x e x f)	0	0	0	0	0
3. Grants, Contacts, and Other External Sources	0	0	0	0	0
4. Other Sources	0	0	0	0	0
TOTAL (add 1-4)	$226,860	$274,950	$308,560	$311,640	$393,450

Table 1 Narrative: The College anticipates that the Neuroscience major will draw new students to St. Mary's. The program does not rely on grants or reallocated funds.

2. Complete **Table 2: Program Expenditures and Narrative Rationale**. Provide finance data for the first five years of program implementation. Enter figures into each cell and provide a total for each year. Also provide a narrative rationale for each expenditure category.

TABLE 2: PROGRAM EXPENDITURES					
Expenditure Categories	**Year 1 2021/22**	**Year 2 2022/13**	**Year 3 2023/24**	**Year 4 2024/25**	**Year 5 2025/26**
1. Faculty (b + c below)	$78,000	$78,000	$156,000	$234,000	$234000
a. Number of FTE	1	1	2	3	3
b. Total Salary	$60,000	$60,000	$120000	$180000	$180000
c. Total Benefits	$18,000	$18,000	$36000	$54000	$54000
2. Admin. Staff (b + c below)	$0	$0	$0	$0	$0
a. Number of FTE	0	0	0	0	0
b. Total Salary	$0	$0	$0	$0	$0
c. Total Benefits	$0	$0	$0	$0	$0
3. Support Staff (b + c below)	$0	$0	$0	$0	$0
a. Number of FTE	0	0	0	0	0
b. Total Salary	$0	$0	$0	$0	$0
c. Total Benefits	$0	$0	$0	$0	$0
4. Technical Support and Equipment	$0	$0	$0	$0	$0
5. Library	$0	$0	$0	$0	$0
6. New or Renovated Space	$0	$0	$0	$0	$0
7. Other Expenses	$4000	$7000	$12000	$21000	$24000
TOTAL (Add 1 - 7)	$82,000	$85,000	$168000	$255000	$258000

Table 2 Narrative: We anticipate growth in this program that will cover the expense of hiring a total of three additional faculty members over the next 5 years. These faculty members will also contribute to the Biology and Psychology programs at SMCM. There are no new costs for administrative staff or support staff, as the Neuroscience program will utilize staff that currently supports the Psychology major and our Neuroscience minor. Other expenses include support for faculty research and travel, as well as supplies needed for courses and student research projects.

M. Adequacy of Provisions for Evaluation of Program (as outlined in COMAR 13B.02.03.15).

1. Discuss procedures for evaluating courses, faculty and student learning outcomes.

St. Mary's attends to student learning outcomes through the assessment procedures already outlined in section G (under "provide for assessment of student achievement of learning outcomes in the program"). For tenure-track faculty, performance is evaluated via a pre-tenure review, a tenure and promotion review, and periodic reviews (every three years until promotion to full professor, then every five years). Performance at each of these post-tenure reviews is evaluated by the Provost based on a system that designates performances deserving merit.

Reviews for tenure and promotion to full professor include faculty course evaluations, which are required for each course taught, and narrative evaluations, which are administered by the department chair in all courses taught by the faculty member in two of the three semesters prior to the submission of their file. Students provide detailed, written responses to questions about the faculty member's expertise and teaching effectiveness in these evaluations. Faculty members up for promotion are also observed by their colleagues who evaluate their teaching effectiveness.

Adjunct and visiting professors are also required to administer course evaluations. Results are monitored by department chairs and the Associate Deans of Faculty and Curriculum, who will discuss evaluations as needed with faculty.

2. Explain how the institution will evaluate the proposed program's educational effectiveness, including assessments of student learning outcomes, student retention, student and faculty satisfaction, and cost-effectiveness.

In addition to the program assessment procedures already outlined, academic programs at St. Mary's undergo a program review process every 7-10 years. These reviews include reflection on assessment procedures as well as an evaluation of curricula, student programming, and support for faculty by an external team.

Student satisfaction is tracked through various survey opportunities, including NSSE (National Survey of Student Engagement), our senior exit survey, and our alumni surveys (alums are surveyed the year after they graduate and every five years after that). Individual programs also periodically survey their students and alums and to gather data on their experience and make adjustments to curricula and programming.

Because St. Mary's is a small school, retention is primarily tracked at the institutional level. However, individual programs can request data concerning students' performance in required courses for the major, and the Office of Institutional Research, Office of the Provost, and the

Office of Student Support Services work together to evaluate patterns of performance in gateway courses for majors.

Cost-effectiveness is monitored via the Provost and the President's Executive Council (which includes the Provost), with input from the Academic Planning Committee. This committee reviews line proposals and evaluates need for resources based on current class sizes.

N. Consistency with the State's Minority Student Achievement Goals (as outlined in COMAR
13B.02.03.05).

1. Discuss how the proposed program addresses minority student access & success, and the institution's cultural diversity goals and initiatives.

St. Mary's minority enrollment has increased in recent years from 19.1% in 2010 to 26.2% in 2019. In support of this change, our current strategic plan includes goals to increase the diversity of faculty and staff by 30% over our 2015 count, and to increase the number of courses offered with a substantial focus on diversity.

In addition, our current administrative structure includes a Chief Diversity Officer and an Assistant Vice President of Equity and Inclusion who work through the division of Inclusive Diversity, Equity, Access and Accountability. The goal of this office is to establish a set of coordinated actions that encompass the participation of various departments, offices, and functional units to foster representation, equity, and inclusivity at all levels of St. Mary's College.

Finally, St. Mary's supports STEM students who are from underrepresented groups both through student-centered and evidence-based pedagogies that improve student learning in general, and more specifically, by offering students the opportunity to participate in the Emerging Scholars Programs. Emerging Scholars take a 1-credit Emerging Scholars class in addition to their regular coursework; students work with a faculty member to develop their skills by working in small groups on challenging problems, building a social identity as scientists and building a social support network of peers and faculty. The Emerging Scholars Program and other efforts to support students from underrepresented groups have been recognized nationally as models of effective practices.

O. Relationship to Low Productivity Programs Identified by the Commission:

1. If the proposed program is directly related to an identified low productivity program, discuss how the fiscal resources (including faculty, administration, library resources and general operating expenses) may be redistributed to this program.

Not applicable. The proposed program is not directly related to any identified low productivity programs at St. Mary's College of Maryland.

P. Adequacy of Distance Education Programs (as outlined in COMAR 13B.02.03.22)

1. Provide affirmation and any appropriate evidence that the institution is eligible to provide Distance Education.

We do not anticipate this program being taught through distance education.

2. Provide assurance and any appropriate evidence that the institution complies with the C-RAC guidelines, particularly as it relates to the proposed program.

We do not anticipate this program being taught through distance education.