COPPIN
STATE UNIVERSITY

Department of Natural Sciences

Graduate Handbook

Fall 2025

Department of Natural Sciences

Graduate Programs Handbook

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Welcome!

Welcome to Coppin State University and the Master of Science in Applied Molecular Biology and Biochemistry (AMBB) and Master of Science in Polymer and Material Sciences (PMS) programs! We are delighted to welcome you to our vibrant community of scholars and researchers. Our programs are designed to provide you with a comprehensive understanding of advanced concepts in biochemistry and molecular biology and polymer and material sciences. Through rigorous coursework, hands-on laboratory experience, and independent research, you will develop the skills and knowledge necessary to excel in your chosen field.

At Coppin State University, we are committed to fostering an environment of academic excellence, innovation, and collaboration. Our dedicated faculty and staff are here to support you every step of the way, ensuring that you have the resources and guidance needed to achieve your academic and professional goals. We encourage you to take full advantage of the opportunities available to you, including engaging in cutting-edge research, participating in seminars and workshops, and connecting with peers and mentors. Your journey here will be challenging, but it will also be enriching.

We look forward to seeing the remarkable contributions you will make to the field of molecular biology and biochemistry and polymer and material sciences.

Best regards,

Dr. Mintesinot Jiru, Department Chairperson

Program Coordinators, Dr. Thavamani Rajapandi (AMBB) and Dr. Fred Nesbitt (PMS)

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I. MS in Applied Molecular Biology and Biochemistry (AMBB) and Post-Baccalaureate Certificate program

1. Program Overview

The AMBB master's program at Coppin State University offers dynamic and interdisciplinary education in molecular biology and biochemistry. Designed for aspiring scientists and innovators, the program provides a strong foundation in the structure and function of macromolecules and their roles in complex biological systems. Students gain hands-on experience through cutting-edge laboratory work and research opportunities, developing the critical thinking and analytical skills essential for success in both academic and industry settings. With a focus on real-world applications, the program prepares graduates to tackle challenges in biotechnology, pharmaceuticals, and biomedical research. Whether you're aiming for a career in the biotech industry or planning to pursue a Ph.D., the AMBB program equips you with the knowledge, skills, and confidence to lead in the fast-evolving world of molecular science. The MS in AMBB program is designed to provide an ideal framework for studying and understanding advanced concepts of biochemistry and molecular biology. It aims to develop interdisciplinary and integrative abilities to prepare competent professionals to solve problems in the field of applied biochemistry and molecular biology.

2. Admissions and Enrollment

Admission requirements and selection process: To be considered for admission to the Master of Science in Applied Molecular Biology and Biochemistry and post-baccalaureate certificate programs, the applicant should meet the following requirements listed below.

- 2.8 minimum grade point average (GPA) in undergraduate courses, including but not limited to:
- General Physics (4 credits)
- General Chemistry (4 credits)

- Organic Chemistry (4 credits)
- Cell Biology (4 credits)
- Biochemistry (3-4 credits)
- Molecular Biology (4 credits)
- Calculus (3-4 credits)
- Statistics (3 credits)
- 2-page personal statement detailing your academic and professional qualifications, as well as your short and long-term academic goals and professional career goals for your chosen field of study
- Official transcripts from each college or university attended
- Three letters of recommendation from a current employer, instructor, or other individual who can attest to your character, integrity, and academic potential.
- Official English equivalency scores (for International Student applicants only)
- Curriculum vitae or resume (optional)
- Official Graduate Record Exam (GRE) scores (optional)
- Submit the Coppin State University online admission application and $50 application fee.

3. Plan of study

M.S. and post-baccalaureate certificate (PBC) programs: The Post-Bac certificate program in Applied Molecular Biology and Biochemistry (AMBB) provides an excellent framework for mastering advanced concepts in biochemistry and molecular biology. Specifically, the program focuses on examining the structure and function of macromolecules and their applications in the biotech industry. It aims to cultivate interdisciplinary and integrative skills, preparing professionals to address challenges in applied biochemistry and molecular biology. Students will gain hands-on experimental experience and ample research opportunities, fostering the critical thinking and analytical skills essential for successful careers in the biotechnology field.

To graduate with a Master of Science in Applied Molecular Biology and Biochemistry, students must complete 34 credit hours (28-course credits & 6 research credits). A detailed information can be found at

Applied Molecular Biology and Biochemistry | Coppin State University

In addition to completing all coursework, all program students must submit a thesis to fulfill degree requirements. The first step is to write and submit a pre-thesis proposal to an advisor and thesis reading committee while taking BIOL 550. The final written thesis should be submitted while taking BIOL 551, and the thesis should demonstrate a scholarly investigation of your advanced understanding of materials and/or polymer science principles learned in all previous coursework and specialized research readings.

For the post-baccalaureate certificate, students must complete 15 credit hours, and the research option is not required for the certificate program.

Fast-Track Program: Requirements for the completion of the Fast-Track program

All qualified undergraduate students may start their graduate career and complete the equivalent of one semester of graduate studies by taking up to 2 courses (equivalent to 8 credits) if the student elects to enter the program. The student could choose to enter the final year of undergraduate study and have a cumulative GPA of at least 2.7 and a 2.8 GPA in their major. Students should also have earned 90 UG credits to enter the Fast Track program.

II. Chemistry Program: MS in PMS

MS in Polymer and Material Sciences (PMS) and Post-Baccalaureate Certificate programs

1. Program Overview

The Master of Science in Polymer and Materials Sciences at Coppin State University is a two-year program that equips students with a comprehensive understanding of the design, synthesis, characterization, and function of various materials. The curriculum emphasizes the structure-property relationships in materials such as biomaterials, bioplastics, blended fuels, nanomaterials, biomarkers, and soft polymers. With a focus on developing efficient biodegradable polymers and plastics, the program prepares graduates for careers in academia, government agencies, and industries, including defense, automotive, aviation, medical technology, and sports apparel.

2. Admission and Enrollment

Admission requirements and selection process: To apply for the Master of Science in Polymer and Materials Sciences program at Coppin State University, applicants must:

- Submit a completed online application along with a non-refundable $50 application fee.
- Provide official transcripts from all colleges and universities attended, demonstrating the completion of an undergraduate degree from an accredited institution.
- Submit three current letters of recommendation from individuals such as employers or instructors who can attest to their character, integrity, and academic potential.
- Provide a two-page personal statement detailing educational preparations, short- and long-term academic and career goals, and identifying at least two research areas of interest, including the names of faculty members with whom the applicant wishes to conduct research and reasons for selecting them.

- Include a curriculum vitae or resume (optional) to highlight relevant experiences such as undergraduate research, internships, or study abroad programs.
- For international applicants, submit official English proficiency scores (e.g., TOEFL, IELTS) as required.
- **Plan of Study- Detailed information can be found at**

  Polymer and Material Sciences | Coppin State University

III. Graduate Program Policies and Guidelines

1. Admission Policy for International Students

The Coppin State University community includes students from more than 44 countries around the world. You are identified as an international student if you meet one of the following criteria.

- You are not a U.S. citizen and have been educated outside of the United States
- You are currently in the U.S. on an F-1 student visa
- You are currently living outside the U.S. and require an F-1 visa to study in the U.S.
- You are currently in the U.S. on another class visa

Resources to evaluate transcripts from non-U.S. institutions.

- Completed graduate admission application
- $50.00 non-refundable application fee (graduate applicants only)
- Official transcripts from all institutions attended
- Additional program requirements, if necessary
- Additional graduate admission requirements, if necessary
- Official test scores, as necessary
- English proficiency documentation, if necessary

All transcripts from schools outside the U.S. must be evaluated before you submit them as part of your admission application.

- College transcripts must be a **course-by-course evaluation**
- High school transcripts must be a **document-by-document evaluation, and we recommend SpanTran for the evaluation.**

SpanTran is our recommended international transcript evaluation service. They have created a custom application for Coppin State University so you can select the right kind of evaluation at a discounted rate.

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Other Evaluators:

World Education Services (WES)

Visit https://www.wes.org/ to learn more today!

Josef Silny and Associates

Visit Josef Silny and Associates at Josef Silny & Associates, Inc (jsilny.org) to complete the Coppin State University application for your transcript evaluation.

2. Inter-Institutional Registration (Permission to take courses at sister institutions)

It is the policy of Coppin State University School of Graduate Studies to encourage graduate students enrolled at Coppin State University to avail themselves of course offerings, research facilities, and special faculty competencies at other institutions of the University System of Maryland. Therefore, degree-seeking graduate students at Coppin may, with the permission of the respective Program Coordinator and the Dean of Graduate Studies, pursue for credit at other institutions within the University System graduate courses to augment their degree programs. Ordinarily, students may earn no more than six (6) graduate credits total at another institution after receiving degree-seeking status.

In granting permission to pursue the opportunity afforded by this policy, significant factors to be considered may include but are not limited to:

1. Availability of a similar or comparable course at the home institution within a reasonable time frame. Convenience is not an adequate justification.
2. Possible enhancement of the student's overall program in a way not possible at the home institution, as the existence at the host institution of a unique research or instructional facility, particular faculty expertise, or the availability of a particular course not offered at the home institution.
3. The level and content of the course, including the nature of prerequisite course work

3. Academic Policies

Academic Dismissal: Students who fail to meet the minimum academic standard of at least a 3.0 cumulative grade point average in the time allowed or have accumulated unsatisfactory grades in excess of the number allowed will be dismissed from their program of study. Appeals will be considered by the Graduate Council Appeals Committee when there exist documented mitigating

circumstances. Appeals of this sort must be supported by the Program Advisor and Program Coordinator and accompanied by an action plan for completion of the program.

Students may apply for readmission after one calendar year [twelve (12) months] from the date of dismissal. An action plan must be developed in consultation with and approved by the Program Advisor, Program Coordinator and Chairperson and include a plan to overcome academic deficiencies and strategies for completing the program of study. The action plan and other supporting documents must be submitted with the application for re-admission to the Dean of Graduate Studies. Re-admitted students must meet requirements in the current catalog at the time of readmission.

Academic Probation: Academic success in graduate study requires that the student maintain a minimum overall "B" average. Students who fall below the required 3.00 cGPA will be placed on academic probation the following semester. Failure to bring the cumulative grade point average to the mandated 3.0 level during the semester the student is on probation will result in dismissal from the University.

No student may accrue more than two (2) "C"s or one (1) "F" during their graduate career at the University. A second "C" will result in academic probation and must be repeated. A third "C" will result in dismissal from the School of Graduate Studies. A course resulting in a grade of "F" must be re-taken the next semester when the course is again offered. Failure to do so may result in immediate dismissal from the University.

Students on probation or dismissal will not be allowed to advance to degree candidacy, be approved for the comprehensive examination, or graduate.

Incomplete "I" grade policy: In the event of extenuating situations, including medical reasons, which prevents a student from attending class after having completed 40% of the coursework, a student can request an "I" grade after discussion with the course instructor and department Chair. The "I" grade request form must be submitted by the student with the required signatures, along with documents supporting specific reasons such as doctor's certificate, before the final grades are entered on Eagle Links. The student must ensure completion of the remaining coursework with passing of the required exams/labs in the semester immediately following the "I" grade semester. "I" grade will convert to "FTC" grade if the above is not followed, and this will eventually convert to an "F" in the transcript.

Academic Grievance. A grievance is any legitimate complaint or dissatisfaction expressed by a student regarding their academic studies. A student who believes they have a legitimate complaint must initiate grievance within fifteen (15) school days of learning the basis for it. The student with a grievance will arrange a meeting with the instructor involved to resolve the issue. If the students feel their academic complaint has not been fairly resolved, they will meet with the

department chairperson, Dr. Jiru, within five (5) school days after they met with the instructor. After meeting with the student or instructor, or both, the department chairperson or team coordinator will issue a decision on the grievance to all involved within ten (10) days. If the student is unsatisfied with the departmental decision, they may file a written appeal with supporting documentation to the Dean and the Provost/Vice President for Academic Affairs within five (5) school days of receiving the decision. The Provost or Vice President, together with the Dean of the relevant college, will decide on the appeal and notify all parties within ten (10) school days of receiving it. If the student believes that his or her grievance was not satisfactorily resolved, the student may submit a written appeal to the President of the University within five (5) school days after receiving the notification of the decision from the Provost, Vice President for Academic Affairs, or College Dean. The President will review and decide on this appeal within fifteen (15) days, and the President's decision will be final. Please refer to the student handbook for additional details.

Full-time/Part-time Status

Full-time graduate students pursue nine (9) credit hours of graduate course work during regular semesters. If a student desires to take more than nine (9) hours, he/she must obtain approval from the Dean of Graduate Studies. Part-time graduate students pursue three to eight (3-8) credit hours of graduate work during regular semesters.

4. Student Conduct and Conflicts

Please refer to the student handbook (Eagle Guide Student Handbook | Coppin State University) for detailed information on student conduct and grievance procedur**es.** Coppin State University ("Coppin") recognizes that differences of opinion, complaints, or grievances may arise between its students, faculty, and staff. It is the responsibility of all Coppin students, faculty, and staff to establish and maintain an educational environment within which a problem or complaint by a student can be promptly identified, presented, discussed, given fair and timely consideration, and successfully resolved. In many instances, complaints can be successfully resolved informally through meaningful dialogue between the student and the other individuals involved. In addition, or as an alternative means, complaints can also be successfully resolved formally through the use of the grievance procedures outlined below. Any Coppin State University student shall have the right to make known a problem or complaint without fear of reprisal or coercion. Complaints by students arising out of allegations of inappropriate, unlawful, or unauthorized behavior by Coppin staff or faculty (including, but not limited to, discrimination, intimidation, and verbal or physical abuse) may be brought to the attention of the University for resolution through the grievance procedures outlined above. The term "student" shall mean any person currently enrolled in a course or courses at Coppin State University, either full-time or part-time.

5. Financial Aid Information

Tuition. Please visit, **Cost of Attendance | Coppin State University** for the tuition cost. Direct Costs: These are expenses that are paid directly to Coppin State University (CSU). They typically include tuition, fees, on-campus housing, and meal plans.

Indirect Costs. These are expenses that are NOT paid directly to Coppin State University (CSU) but are anticipated costs for living and other personal expenses while you are enrolled. Examples of indirect costs include off-campus housing, transportation, and supplies.

The cost of attendance represents the maximum amount of financial aid that students may receive from all sources, including student loans. Actual cost may vary.

Financial Aid. Graduate school is often more expensive than your undergraduate college experience, so it's important to research all available types funding to finance your education. There are federal financial aid options to pay for graduate school. Many graduate students seek scholarships, internships, assistantships, as well as federal financial aid options like grants, loans, and Federal Work-Study (FWS).

Apply for Graduate Federal Financial Aid. You must complete the Free Application for Federal Student Aid (FAFSA) to be eligible for any federal financial aid, including grants, loans, and Federal Work-Study (FWS). Go to our How to apply for financial aid page and follow the steps to complete your FAFSA before the priority March 1st deadline. You must be a U.S. citizen or permanent resident of the United States to be eligible for federal and state financial aid. If you have your permanent residency card, you must be prepared to submit it as part of any financial aid application.

Additional Graduate Student Funding Opportunities. Federal financial aid isn't the only type of funding available to graduate students. Coppin offers several ways to help graduate students pay for books and materials, as well as cover certain life emergencies. Please refer to the School of Graduate Studies for additional information.

6. Selection of Research Thesis Advisor and Thesis Committee Members

Students enrolled in the Master of Science in AMBB and PMS degree programs are required to complete hands-on research and submit a research thesis in partial fulfillment of the degree requirement

Advising and Mentoring. A thesis Committee will be established before enrollment in the first Research thesis course. It will be composed of three (3) members: the major advisor (who serves as chairperson), one (1) member from the student's major department, and one (1) member from the graduate faculty outside of the student's major department selected by the student after consultation with and approval by the major advisor. The student also has the right to request the appointment of an outstanding practitioner in the field of study as the third member of the committee, provided that the individual holds a doctorate and is approved by the major advisor.

7. Department of Natural Sciences Faculty Research Profile

Biology:

Dr. Thavamani Rajapandi, Professor of Biology
Molecular Mechanisms of the development of transmissible form of Plasmodium falciparum malaria in human red blood cells.
Micro and nano-plastic exposure and regulation of oxidative stress-related signaling pathways in *Tetrahymena* and *C. elegans.*

Dr. Kavita Hegde, Professor of Biology
Investigating mechanisms of oxidative stress-induced aberrations in the neural retina and examining the effectiveness of novel antioxidants as neuroprotective agents.

Dr. Jacob Adeyeye, Associate Professor of Biology.

Analysis and Characterization of MRSA capsular material with the view of exploring some of the epitopes for vaccine development. (2) Regeneration of *Conocephalun conicum* as influenced by mineral nutrients, light, and gravity.

Dr. Dondra Bailey, **Assistant Professor of Biology**.
Molecular mechanism of oocyte development in Zebra fish. The involvement of cytoskeletal cross-linker proteins in establishing oocyte polarity using zebrafish as a model organism.

Dr. Emanual Atta-Obeng, Assistant Professor of Biology
Development of sustainable bioproducts from biological resources and biorefinery wastes, such as lignin and hemicellulose, using biochemical engineering principles to advance a circular economy.

Chemistry:

Dr. Fred Nesbitt, Professor of Chemistry

Application of computational chemistry and Raman spectroscopy for the detection and analysis of per- and polyfluoroalkyl substances (PFAS), particularly PFHpA and PFOA, in various matrices.

Dr. Jamal Uddin, Professor of Chemistry
Synthesis, characterization, and application of nanomaterials Novel methods used in the synthesis of carbon nanotubes, carbon dots, quantum dots, gold, iron, and silver nanoparticles which are subsequently characterized with state of the art instrumentation such as Transmission Electron Microscopy (TEM), Field Emission Scanning Electron Microscopy, (FESEM), Atomic Force Microscopy (AFM), Thermogravimetric Analysis, and Dynamic Light Scattering. These nanoparticles have bioimaging, anti-fungal and antibacterial, and water purification applications.

Dr. Hany Sobhi, Professor of Chemistry
Synthesis of specialty-functionalized polymers for medical device applications This Project is designed for the development of new synthetic methodology for specialty-functionalized polymers and to investigate their physical, thermal, and spectroscopic properties for medical devices & clinical dentistry applications by using advanced innovation in search of biocompatibility and efficiency.

Dr. Tulio Chavez-Gil, Associate Professor of Chemistry
Semi critical Extraction methods, SmCSE: A Highly Thermochemical Innovation A thermophysical technology which is under development and applies for extraction of algae oil, Food, Plants (proteins, vitamins, antioxidants, metabolites, oils, fragrances), for Coal & Petroleum extraction of oils, hydrocarbons (gas/liquids), asphaltenes, sulfur (organic/inorganic), and poly-aromatic hydrocarbons (PAH's), for extraction of edible oils from Coffee Ground with potential use in pharmacy bioproducts, nutraceuticals, and food additives by using an advanced innovation in search of efficiency and reliability for its scaling up.

Dr. Jude Namanga, Assistant Professor of Chemistry
Organic semiconductor devices and material development This project focuses on developing advanced organic semiconductor materials and devices for applications in sensors, organic light-emitting diodes (OLEDs), and light-emitting electrochemical cells (LEECs), with the goal of advancing efficient, flexible, and lightweight optoelectronic technologies

8. Contact Information
Dr. Mintesinot Jiru, Department Chairperson, mjiru@coppin.edu
Tel: 410-951-4139
Dr. Thavamani Rajapandi, MS (AMBB) Program coordinator, trajapandi@coppin.edu
Tel: 410 951-4260

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Dr. Fred Nesbitt, MS (PMS) Program coordinator, fnesbitt@coppin.edu
Tel: 410-951-4119

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