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

Institution Submitting Proposal	Salisbury University

Each action below requires a separate proposal and cover sheet.

- (●) 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 # JB411820 ( ) Check # JB411820

Payment Amount: $850

Date Submitted: 2/23/24

Department Proposing Program	Physics	
Degree Level and Degree Type	Bachelor of Science	
Title of Proposed Program	Engineering Physics	
Total Number of Credits	120	
Suggested Codes	HEGIS: 190201.00	CIP: 14.1201
Program Modality	(●) On-campus	( ) Distance Education (*fully online*)
Program Resources	(●) Using Existing Resources	( ) Requiring New Resources
Projected Implementation Date	(●) Fall ( ) Spring ( ) Summer	Year: 2024
Provide Link to Most Recent Academic Catalog	URL: http://catalog.salisbury.edu/	
Preferred Contact for this Proposal	Name: Dr. Melissa Boog	
	Title: Associate Vice President of Academic Affairs	
	Phone: (410) 543-6018	
	Email: mmboog@salisbury.edu	
President/Chief Executive	Type Name: Dr. Laurie Couch	
	Signature: Laurie L Couch	Date: 03/15/2024
	Date of Approval/Endorsement by Governing Board:	11/30/2023

Revised 1/2021

Salisbury UNIVERSITY

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March 15, 2024

Dr. Sanjay K. Rai
Maryland Higher Education Commission
Acting Secretary of Higher Education
6 North Liberty Street
Baltimore, MD 21201

Dear Dr. Rai:

On behalf of President Carolyn Lepre, the faculty, and the entire Salisbury University (SU) community, I am pleased to submit a request for approval for a new Bachelor of Science in Engineering Physics. The B.S. Engineering Physics program prepares students to apply physics principles to tackle modern engineering challenges, and to apply engineering to address cutting-edge questions in physics. Graduates will have an opportunity to explore numerous employment options in engineering-related career fields, including: aerospace and defense, automotive, biomedical, computer electronics, energy, materials science, nanotechnology, optics and photonics, semiconductor manufacturing, and telecommunications.

SU's Engineering Physics graduates will possess skills that are highly transferable and applicable in a wide range of engineering applications.

R*Stars payment (JB411820) of $850 was paid on February 23, 2023.

The proposal, fully endorsed by Salisbury University, is attached for your review.

Thank you for your consideration.

Sincerely,

Laurie L. Couch

Laurie Couch, Ph.D.
Provost and Senior Vice President of Academic Affairs

ecc: Dr. Candace Caraco, Associate Vice Chancellor for Academic Affairs, USM

UNIVERSITY SYSTEM OF MARYLAND INSTITUTION PROPOSAL FOR

X	New Instructional Program
	Substantial Expansion/Major Modification
	Cooperative Degree Program
X	Within Existing Resources, or
	Requiring New Resources

Salisbury University

Institution Submitting Proposal

Bachelor of Science in Engineering Physics

Title of Proposed Program

Bachelor of Science	**Fall 2024**
Award to be Offered	Projected Implementation Date
190201	14.1201
Proposed HEGIS Code	Proposed CIP Code
Physics	Dr. Mark Muller
Department in which program will be located	Department Contact
410-677-0023	mwmuller@salisbury.edu
Contact Phone Number	Contact E-Mail Address
Laurie L. Connell	3/15/2024
Signature of President or Designee	Date

A. Centrality to Institutional Mission and Planning Priorities

1. Program Description

The Richard A. Henson School of Science and Technology at Salisbury University (SU) is pleased to submit a proposal for a new Bachelor of Science degree in Engineering Physics. The B.S. Engineering Physics program prepares students to apply physics principles to tackle modern engineering challenges, and to apply engineering to address cutting-edge questions in physics. It is a cross-functional major that bridges the gap between applied science and practical engineering. It is both experimental and theoretical as it emphasizes research and development while also focusing on the design and analysis of complex problems. The program will combine a strong foundation in physics and mathematics with coursework in engineering principles and design. Students will learn to use their knowledge of physics to solve real-world problems, and to develop new technologies and applications.

Students will complete a full suite of courses including calculus, differential equations, two full years of physics principles, and fundamental concepts in electricity, magnetism, and mechanics. Additionally, students will choose from a list of electives that includes dynamics, thermodynamics, fluid mechanics, semiconductor physics, analog and digital electronics, and computer architecture. Finally, students will engage in a capstone seminar and a research project of their own design, providing a summative experience for the program.

The B.S. Engineering Physics program provides the fundamentals for students to adequately prepare for the National Council of Examiners for Engineering and Surveying (NCEES) Fundamentals of Engineering (FE) exam. The FE exam is a prerequisite for engineering licensure. Passing the FE exam prior to graduation can lead to more early-career opportunities for advancement, and helps differentiate engineering graduates from their peers. Once the FE exam is passed, the records are maintained by the Maryland Board of Professional Engineers and remain valid nationwide. Passing the FE exam allows a graduate to be listed in the Maryland Board of Professional Engineers database of Engineers-in-Training (EITs), which is accessible to any company seeking entry-level engineers. Passing the FE exam verifies the graduate's aptitude for advanced engineering work and eventual professional licensure.

A degree in Engineering Physics is a highly employable major according to data provided by the National Association of Colleges and Employers, and graduates will have an opportunity to explore numerous employment options in engineering-related career fields. Students are sought after by employers in a wide range of industries, including: aerospace and defense, automotive, biomedical, computer electronics, energy, materials science, nanotechnology, optics and photonics, semiconductor manufacturing, and telecommunications. SU's Engineering Physics graduates will possess skills that are highly transferable and applicable in a wide range of engineering applications.

This degree program, once approved, will be available to students beginning in August 2024 and most students will be able to complete the Bachelor of Science in Engineering Physics degree in four years.

2. How Proposed Program Supports Institution's Strategic Goals

The proposed B.S. Engineering Physics program supports Salisbury University's mission to "empower our students with the knowledge, skills, and core values that contribute to active citizenship, gainful employment, and life-long learning in a democratic society and interdependent world" and to "actively contribute to the local Eastern Shore community and the educational, economic, cultural, and social needs of our State and nation" (SU's Mission and Values, 2019). The B.S. Engineering Physics program provides students with a multidisciplinary background in science, technology, engineering, and mathematics to prepare them for the demands of Engineering Physics career fields.

While its administrative home will be in the Henson School of Science and Technology's Physics Department, the program utilizes a multi-disciplinary approach to allow students to pursue "a broad array of ideas and perspectives" within the field of Engineering Physics as promoted in the University's mission. This approach will help students achieve excellence, envision their future as engineers, grow intellectually, and pursue career, leadership, and graduate school opportunities.

Further, the proposed program aligns with several of SU's Strategic Plan objectives including: 1.1: Continue to support and develop our wide range of exceptional and challenging academic programs and experiences; 4.3: Enhance and expand local and regional partnerships and strategic alliances with private, public, and nonprofit organizations; and 5.1 Serve as a leader in our region in providing educational opportunities that enhance social, environmental, and economic sustainability.

3. Brief Narrative Describing Adequate Financing of Program

Currently, SU offers an Area of Concentration (AoC) in Engineering Physics in the existing BS Physics program. Therefore, all of the courses needed to offer a new BS program in Engineering Physics are already being taught by current faculty. There will be no need for additional funding at the outset. However, creating a stand-alone BS degree will allow us to seek ABET accreditation for the program and therefore drive enrollment growth. If successful, that could necessitate additional faculty and administrative support. Similarly, as the program evolves, additional funding may be required for space and equipment upgrades. Advising support will be critical to the success of this program and that capacity is currently available within our Academic Advising Center. If the program were to grow significantly, more advising support would be necessary. For more details, see section L below.

4. Commitment to Adequate Continued Support

The proposed program is expected to attract a new set of students who are interested in Engineering Physics and pursuing careers which require engineering licensure. The uniqueness of the program will draw students from the region and beyond. Salisbury University is committed to providing additional administrative, financial, and technical support to meet the growing student demand. The university has established administrative structures to support the new program, as demonstrated by the thorough vetting and approval process involving the Chair of the Department, the Henson School Curriculum Committee, the Dean of the Henson School, the Undergraduate Curriculum Committee, and the Provost. SU also guarantees the provision of appropriate support to ensure the successful completion of the degree for all students enrolled in the program. In the unlikely event of a program suspension or discontinuation, SU will implement a plan to allow all enrolled students the opportunity to complete their degree. For more financial details, see section K below.

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

1. Demonstrate Demand and Need for the Program

Maryland has more demand for engineers than its universities have the capacity to educate them. The Maryland Department of Labor estimates that there will be approximately 1,000 new engineering jobs by 2030. SU's Engineering Physics degree plays a pivotal role in meeting this demand, driving advancement and fostering the evolution of knowledge. The students we envision serving with this program are undergraduate students from both Maryland and the Mid-Atlantic region. Local students from Maryland's Eastern Shore should be particularly attracted to this program since there are several well-known pathways to internships and entry-level jobs at local technically focused companies and engineering firms. Transfer students from community colleges will be welcomed to this program, as much of the foundational curriculum is taught at the first- and second-year level.

2. Consistency with Maryland State Plan for Postsecondary Education

The State directs its postsecondary institutions to "respond nimbly to changes in industries, and programs must support student development in critical thinking, problem-solving, and communication skills throughout the curriculum," as indicated in Goal #5 of the Maryland State Plan for Postsecondary Education (2017-2021).[1] The B.S. Engineering Physics degree will advance this goal by providing a unique high-quality program that facilitates "lifelong learning, preparing students to enter the workforce and advance in their careers, fostering cultural understanding, emphasizing ethical principles and practices in personal and professional interactions, and conveying the importance of contributing to the common good as a citizen of the local, national, and global

[1] https://bit.ly/2GgJnw8, pg 51

communities."[2] The program prepares students to be effective engineers who can be competitive in an area of expanding demand.

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

The US Bureau of Labor Statistics (BLS) estimates there are currently 5,240 employed civil engineers with an annual median wage of $82,190. The Maryland Department of Labor estimates the profession will add 515 new positions requiring a bachelor's degree statewide by 2030, a growth of 6.72%. In the electrical engineering industry, the US Bureau of Labor Statistics (BLS) estimates there are 4,520 electrical engineers with an annual median wage of $111,660. The Maryland Department of Labor estimates there are currently 6,484 electrical engineering positions statewide. They believe the profession will add 375 new positions requiring a bachelor's degree statewide by 2030, a growth of 5.72%. In the mechanical engineering industry, the US Bureau of Labor Statistics (BLS) estimates there are 5,290 mechanical engineers with an annual median wage of $104,250. The Maryland Department of Labor estimates there are currently 6,137 mechanical engineering positions statewide. They believe the profession will add 158 new positions requiring a bachelor's degree statewide by 2030, a growth of 2.64%. A indeed.com search on October 6, 2023, yielded the following:

- 1,176 current open electrical engineering positions.
- 754 current open civil engineering positions.
- 466 current open electrical engineering positions.

D. Reasonableness of program duplication

Engineering is a high-demand discipline, and SU believes that offering a degree in Engineering Physics will not burden other schools in Maryland. Salisbury University is one of only two USM institutions that serve the residents of the Eastern Shore of Maryland and the other, the University of Maryland Eastern Shore, does not offer an undergraduate degree in Physics generally or Engineering Physics specifically.

Regarding Engineering more generally, eleven universities operating in the State of Maryland offer some form of engineering curriculum (Capitol Technology University, Frostburg State University, Goucher College, Johns Hopkins University, Loyola University, Morgan State University, Stevenson University, US Naval Academy, University of Maryland Baltimore County, University of Maryland College Park, and University of Maryland Eastern Shore). Most of these programs have a number of particular specializations or concentrations, but only one (Morgan) is specifically focused on physics principles with engineering applications.

Capitol Technology University, a private, doctoral-granting university in Laurel, Maryland, offers bachelor's degrees in aeronautical engineering, computer engineering, electrical engineering, electronics engineering technology and

[2] https://bit.ly/32Dzvpx, pg 19

computer engineering technology. In the 2021-2022 academic year, they graduated 27 students from all engineering and engineering technology programs. Their engineering curriculum focuses on traditional engineering foundations specific to the specialized focus areas. The core curriculum includes only three semesters of physics content. CTU does not focus on physics concepts applied to engineering problems and does not offer a degree in engineering physics.

Frostburg State University, a regional comprehensive master's-level university in Frostburg, Maryland, offers a bachelor's degree in engineering with concentrations in electrical and materials engineering and a degree in mechanical engineering with a collaborative agreement with University of Maryland College Park. In the 2021-2022 academic year, they graduated 19 students with an engineering degree. Their engineering curriculum focuses on traditional engineering foundations specific to the specialized focus areas and only includes three semesters of Physics. Frostburg does not offer a degree in engineering physics but it does have an Engineering track within its BS Physics program. This track is largely similar to our proposed BS Engineering Physics program but is not a standalone major. Frostburg graduated one person with a degree in Physics in the 2021-2022 academic year.

Goucher College, a private liberal arts college in Baltimore, Maryland, offers a bachelor's degree in engineering science with tracks in environmental systems, chemical systems, and physical systems. In the 2021-2022 academic year, they graduated no students from this program. This interdisciplinary curriculum is quite different than our proposed Engineering Physics degree. Per their website, this is a non-traditional curriculum designed to combine "…a foundation of core principles from the physical sciences and mathematics with broad skills-based preparation for solving real-world problems." Goucher seems to no longer offer a Physics major.

Johns Hopkins University, a private doctoral-granting, research -intensive university in Baltimore, Maryland, offers a bachelor's degrees in eleven specialties of engineering including biomedical, chemical, electrical, environmental, and mechanical engineering. In the 2021-2022 academic year, they graduated 295 students with an engineering degree. The only degree program that might compare to the proposed program is the General Engineering degree but that is liberal arts degree and is not ABET accredited. JHU also has a robust BS in Physics program, graduating 10 students in 2021-2022. There does not seem to be, however, a degree program that attempts to address both advanced physics content with an eye toward applying those principles to engineering concepts. The listed areas of excellence in the Department of Physics are astrophysics, condensed matter physics, elementary particle physics, and plasma physics.

Loyola University, a private large master's-level university in Baltimore, Maryland, offers a bachelor's degree in engineering with concentrations in computer, electrical, materials, and mechanical engineering. In the 2021-2022 academic year, they graduated 31 students with an engineering degree. Their engineering curriculum focuses on traditional engineering foundations specific to the specialized focus areas and only includes three semesters of Physics. Loyola does not offer a degree in engineering physics but it does have a five-year, dual degree physics and engineering degree. This program is somewhat similar to our proposed BS Engineering Physics program but is takes

an additional year to complete and is focused on delivering a mechanical engineering concentration. Loyola graduated one person with a degree in Physics in the 2021-2022 academic year.

Stevenson University, a private large master's-level university in Stevenson, Maryland, offers a bachelor's degree in biomedical engineering. In the 2021-2022 academic year, they graduated no students with an engineering degree. Their engineering curriculum focuses on solving human health-related problems by applying engineering principles. Stevenson does not offer a degree in physics.

The US Naval Academy, a military service academy in Annapolis, Maryland, offers bachelor's degrees in nine different specialties of engineering including aeronautical, electrical, mechanical, and nuclear engineering. In the 2021-2022 academic year, they graduated 378 students with an engineering degree. The engineering concentration most similar to the proposed program is the general engineering major, which focuses on traditional engineering foundations but allows midshipmen to take electives in additional physics concepts. According to their website, the Naval Academy considers general engineering to be for students who have found "…one of the other engineering majors to be more demanding or more narrowly focused than expected." The Naval Academy does not offer a degree in engineering physics but it does have a BS Physics program. While comprehensive in its exploration of physics principles, this program lacks a track for students to explore engineering concepts.. USNA graduated 20 students with a degree in Physics in the 2021-2022 academic year.

University of Maryland Baltimore County, a doctoral-granting, research-intensive university in Baltimore, Maryland, offers three different bachelor's degrees in engineering – chemical, computer, and mechanical engineering. In the 2021-2022 academic year, they graduated 198 students with an engineering degree. Their engineering curriculum focuses on traditional engineering foundations specific to the specialized focus areas and only includes two semesters of Physics. UMBC does not offer a degree in engineering physics but it does have a BS Physics program. It seems possible that students could choose to add additional engineering electives to craft a program similar to what is proposed. UMBC graduated 21 students with a degree in Physics in the 2021-2022 academic year.

University of Maryland College Park is a doctoral-granting, research-intensive university in College Park, Maryland and the flagship university of the University System of Maryland. They offer bachelor's degrees in eleven different specialties of engineering including aerospace, biocomputational, chemical, civil, electrical, and mechanical engineering. In the 2021-2022 academic year, they graduated 1,088 students with an engineering degree. Each degree within engineering contains multiple concentrations/tracks although none seem to focus on physics principles. UMCP does not offer a degree in engineering physics. Their BS Physics program does not seem to make engineering courses available as electives. UMCP graduated 66 students with a degree in Physics in the 2021-2022 academic year.

University of Maryland Eastern Shore, a doctoral-granting research university in Princess Anne, Maryland, offers a bachelor's degree in engineering with specializations in aerospace, computer, electrical and mechanical engineering.

In the 2021-2022 academic year, they graduated 12 students with an engineering degree. Their engineering curriculum focuses on traditional engineering foundations specific to the specialized focus areas and includes three semesters of Physics. UMES does not offer a degree in physics.

Notably, the proliferation of engineering-related programs indicates a strong need for workforce training in this critical area.. However, we have proposed Engineering Physics specially to both avoid program duplication and lean in to the strength of the Salisbury University faculty's competencies.

The only Maryland institution currently offering an undergraduate degree in Engineering Physics is Morgan State University. Morgan's Engineering Physics curriculum is very typical for these programs, with a full complement of mathematics and chemistry prerequisites and 45 credits of core Physics content including Physics 1, Physics 2, Modern Physics, Mathematical Physics, Electricity & Magnetism, Thermodynamics, etc. However, in Morgan's program, students can choose from three different tracks (Electronics/Circuits, Engineering Science, or Engineering Design). In the most recent data available from the Department of Education (2021-2022), Morgan had 2 graduates with a BS in Engineering Physics.

While on the surface, it may seem as if Morgan and Salisbury's programs would be duplicative, Morgan's program serves a complete dissimilar area of the state of Maryland and enrolls a very different cohort of students that those at Salisbury. Morgan is a Public Urban Research University located in the northeast Baltimore. It is located about 120 miles, or a 2.5 hour drive away, from Salisbury University, a regional comprehensive, master's level, small city/rural institution. From 2017 to 2021 (the latest data available[3]), the BS Engineering Physics program admitted 43 students. Female students made up 37% of the incoming cohorts. A significant majority (84%) of admitted students identified themselves as Black. For the University overall in 2021, 44% of students come from outside Maryland. In comparison, during the same time period, the Engineering Physics concentration in the BS Physics program at Salisbury University admitted 40 students. Female students made up 15% of the incoming cohorts. Only 3 students (7.5%) identified as Black. For SU overall, only 17% of students come from outside Maryland.

However, to support and strengthen the relationship between SU and Morgan, we have proposed creating a preferred pathway between graduates of the BS Engineering Physics program and Morgan's recently approved doctoral program in Integrated Materials Science. This pathway will encourage students to seek their graduate degree at Morgan upon completion of their degree program at SU. This cooperative agreement establishing this preferred pathway is currently being negotiated and would take effect once the BS in Engineering Physics at SU was established.

By creating a pathway, SU's program can address a statewide need to: (1) answer students career trajectory demands by providing long-term graduate educational opportunities as outlined in the latest Maryland State Plan

[3] https://www.morgan.edu/office-of-institutional-research/interactive-dashboards/fall-cohorts

for Postsecondary Education and (2) provide educational opportunities and choices for minority students at institutions of higher education as required by Maryland's COMAR 13B.02.03.05.

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

The proposed program will not negatively impact high-demand programs at HBIs, including Morgan where an Engineering Physics degree is offered. Morgan has a well-regarded, burgeoning School of Engineering, offering BS, MS, and PhD degrees in Civil, Electrical, Industrial, & Transportation Engineering. These programs generated 178 graduates in 2022, demonstrating considerably higher demand than Engineering Physics with its 2 graduates in the same period.

SU is committed to serving minority communities, which is evdient through our current Physics/Engineering program partnership with The University of Maryland, Eastern Shore. UMES has significant offerings in Engineering, with concentrations in aerospace, computer, electrical, mechanical, and biomedical engineering. While being engineering-focused, SU's proposed Engineering Physics program is a degree in Physics and will be primarily taught by faculty in the Department of Physics. UMES does not offer any Physics degree programs.

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

As noted above, the proposed program will not negatively impact high-demand programs or the identity of HBIs. Morgan University, the only school in the State to offer Engineering Physics and an HBI, has a strong and growing presence in the education of Maryland's engineering workforce. It does not, however, seem to regard Physics as an area of emphasis critical to its identity.

G. Adequacy of curriculum design and delivery to related learning outcome.

1. How the Proposed Program was Established; Faculty Oversight

A full course listing with course titles and descriptions is provided in Appendix A. These courses were chosen to include stated industry needs of mathematics, engineering, and various science disciplines. The unique design of this program combines a breadth of knowledge developed from a group of fundamental courses and specialized Engineering Physics courses. By integrating the specific science disciplines, students in the program will better develop an array of critical thinking, communication, and leadership aptitudes, which are broadly applicable in a rapidly changing technological environment and interdependent society.

The Engineering Physics major will be housed in the Henson School of Science and Technology's Physics Department and will generally be managed by the Physics Department's Engineering Coordinator. The chairs of departments with courses included in the Engineering Physics curriculum will be consulted as necessary: Dr.

Matthew Bailey, Physics; Dr. Stephen Habay, Chemistry; Dr. Veera Holdai, Mathematics; Dr. Dan Harris, Geography and Geosciences.

The B.S. Engineering Physics program requires 43 credits of general education courses, 15 of which are fulfilled in the core courses, 59 credits of engineering core courses, 27 credits of required major courses, and 6 credits of electives.

2. Educational Objectives and Learning Outcomes

The B.S. Engineering Physics program follows a student-centered learning approach that is the hallmark of Salisbury University[4] and focuses on principles, models and techniques that engineers use to perform their jobs effectively and support a broad array of applications.

Program objectives for graduates of the B.S. in Engineering Physics are: 1) demonstrate the knowledge and skills central to the field of Engineering Physics; 2) use formal techniques and methodologies of abstraction to create methods to solve real-world problems; 3) apply acquired knowledge to cross-disciplinary problems as part of a project team; and 4) effectively and competitively pursue careers to meet the growing demand for engineers. SU's University Analysis, Reporting and Assessment (UARA) provides official student data and facilitates the collection and presentation of data for Academic Program Reports (APR) on a seven-year cycle. These APRs formalize the assessment of student learning outcomes to drive programmatic decision-making. At the end of each academic year, the program will assess the extent to which learning outcomes are achieved by each student in the program. Modifications to classes or other adjustments may be made in response to areas where learning outcomes are not consistently achieved. Assessment and Documentation of Student Learning Outcomes: see Section L below.

3. List of Courses with Credit Hours and Course Descriptions

Overall Accounting of Credits

Courses	# of Credits
General Education (Not fulfilled by major)	28
Major Core	65
Major Electives	15-16
Electives	11-12
TOTAL	**120 credits**

Core Courses: Required courses include the following (see Appendix A for course descriptions).

Complete the following:

[4] https://www.salisbury.edu/discover-su/mission-values.aspx

CHEM 121 – General Chemistry I	4
CHEM 122 – General Chemistry I	4
COSC 118 – Introductory Scientific Programming	4
ENGR 100 – Introduction to Engineering Design	3
ENGR 110 – Statics	3
MATH 201 – Calculus I	4
MATH 202 – Calculus II	4
MATH 310 – Calculus III	4
MATH 311 – Differential Equations I	4
PHYS 221 – Physics I	4
PHYS 223 – Physics II	4
PHYS 225 – Physics III	3
PHYS 309 – Mathematical Physics	3
PHYS 311 – Electrical Circuits and Electronics	4
PHYS 313 – Introduction to Modern Physics	3
PHYS 314 – Mechanics	3
PHYS 315 – Electricity and Magnetism	3
PHYS 470 – Senior Seminar	1
ENGR 490 – Engineering Capstone Experience	3
OR	
PHYS 490 – Physics and Astronomy Capstone Experience	3

Engineering Physics Elective Courses: Complete five (5) courses include the following (see Appendix A for course descriptions).

ENGR 220 – Mechanics of Materials	3
ENGR 221 – Dynamics	3
ENGR 232 – Thermodynamics	3
ENGR 331 – Fluid Mechanics	3
ENGR 332 – Heat Transfer	3
ENGR 361 – Vibrations, Control, and Optimization	3
ENGR 409 – Acoustics	3
PHYS 318 – Semiconductor Physics	3
PHYS 321 – Analog Electronics	3
PHYS 322 – Digital Electronics	4
PHYS 413 – Computer Architecture and Interfacing	3

Total Credits (Core + Major) 80-81 credit hours

General Education Courses:

SU Signature Outcomes: Must complete at least 3 credits in each of the following areas:

- Civic and Community Engagement
- Diversity and Inclusion
- Environmental Sustainability

Approved courses in the above areas may also include General Education requirements below.

Approved courses in the above areas may also include major coursework.
If a student does not complete a course in all three areas above within their General Education or major coursework, an additional course(s) must be completed in order to fulfill these requirements.

First Year Seminar: Academic preparation, skills and expectations for educational and professional success through exploration of a topic or issue.
SLOs: Critical Thinking and Reasoning, Effective Reading, Information Literacy, Oral Communication, Written Communication, Intellectual Curiosity

Communicating Through Writing: Effective reading, writing, and information usage.
SLOs: Effective Reading, Information Literacy, Written Communication

Quantitative Analysis: Numerical, analytical, statistical, and problem-solving skills. **Fulfilled by Major**
SLOs: Quantitative Reasoning

Human Expression: Exploration of the different ways individuals and societies have and continue to express themselves and communicate the human experience.
SLOs: Knowledge of Human Experience, Intellectual Curiosity, Ethical Reasoning

Humanity in Context: Critical and comparative analysis of humanity, emphasizing the role of history, culture, and/or language in human issues.
SLOs: Critical Thinking and Reasoning, Understanding the Human World, Effective Reading, Knowledge of Human Experience, Intercultural Competence

Social Configurations: Quantitative and/or qualitative analysis of human behavior and/or societies.
SLOs: Understanding the Human World, Knowledge of Human Experience, Emerging and Enduring Global Issues, Intercultural Competence

Social Issues: Applied social science, with an emphasis on understanding and solving problems in the social or behavioral sciences.
SLOs: Quantitative Reasoning, Knowledge of Human Experience, Emerging and Enduring Global Issues, Ethical Reasoning

Hands-on Science: Experiential laboratory-based science. **Fulfilled by Major**
SLOs: Quantitative Reasoning, Scientific Reasoning, Knowledge of the Physical World

Solutions Through Science: Applied science, with an emphasis on understanding and solving problems in the natural, physical, and technological sciences (may or may not include a lab). **Fulfilled by Major**
SLOs: Critical Thinking & Reasoning, Quantitative Reasoning, Scientific Reasoning

Personal Wellness: Interconnected dimensions of wellness, including physical, emotional, and financial, to live a healthy, successful life.
SLOs: Personal Health and Wellness

Experiential Learning: Apply knowledge and competencies from General Education through internship, study abroad/away, research, senior project, or other relevant experience. **Fulfilled by Major**
SLOs: Critical Thinking and Reasoning, Information Literacy, Oral Communication, Written Communication, Ethical Reasoning, Intellectual Curiosity

Total Credits **43 credit hours**

4. Specialized accrediation or graduate certificaiton requirements:
There are no specialized accreditation or gaudate certification requirements for this program.

5. Contracting with another institution or non-collegiate organization.

There are no contracts with other institutions or organizations.

6. Assurance that SU provides clear, complete and timely information to students

Salisbury University, the Henson School, and the Physics Department are committed to and will provide clear, complete and timely information pertinent to all Engineering Physics students through official communication channels.

Upon approval, the program's academic requirements are clearly articulated on designated program pages that are located with the university's catalog. Each undergraduate program provides students with a suggested 4-year course of study (aka Curriculum Guide) that is easily accessible within the program page. Students will have access to degree audits that are located in their student portal within Peoplesoft. Additionally, students will have access to professional academic advisors who will support the student in academic support.

Each course offered within the program will provide the student with a syllabus that outlines the expectations for faculty/student interaction, technical equipment requirements, and the learning management system. In addition, approval of the program will be communicated in a timely manner to the appropriate offices on campus. Information regarding financial aid resources and cost of payments policies are clearly communicated on the Accounts Receivable & Cashiers Office and Office of Financial Aid & Scholarships' webpages.

The Academic Advising Center prepares all advisors to assist incoming students with all academic programs; furthermore, the Academic Advising Center dedicates one of their advisors as a liaison to the Department of Physics, the home of the proposed degree. Our catalog and website make available all pertinent information to prospective and current students regarding academic and student support, SU's learning management system, financial aid resources and costs and payment policies.

7. Assurance that advertising, recruiting and admission material are clear and accurate

All publications, including marketing, catalog and website admissions pages are vetted by the Marketing and Communications Department at SU, which fact-checks all submissions.

H. Adequacy of Articulation: See Appendix C

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

1. Narrative of Faculty Demonstrating Quality of Program Faculty

The science, mathematics, and engineering courses will be taught by SU's faculty from the Henson School of Science and Technology. Collectively, these faculty have decades of experience teaching undergraduates.

Table of Faculty Resources. (note: all faculty are regular state employees, not contractual)

	Faculty Member	Terminal Degree	Field	Degree-granting Institution	Academic Rank	Full- or Part-Time	Courses overseen
Chemistry	Stephen Habay	Ph.D.	Chemistry	Univ of Pittsburgh	Professor and Chair of Chemistry	FT	CHEM 121 & 122
Computer Science	Xiaohong Wang	Ph.D.	Computer Science	Univ of Victoria	Professor and Chair of Computer Science	FT	COSC 118
Mathematics	Veera Holdai	Ph.D.	Mathematics and Statistics	Wayne State Univ	Professor and Chair of Mathematics	FT	All MATH courses
Physics	Matthew Bailey	Ph.D.	Physics	Utah State Univ	Associate Professor and Chair of Physics	FT	All ENGR and PHYS courses
Physics	Mark W. Muller	Ph.D.	Mechanical Engineering (Grad. Cert. Coastal Engineering)	Univ of Hawai'i (Old Dominion Univ)	Professor	FT	Program Coordinator

2. Demonstrate Pedagogical Training for Faculty

The Center for the Advancement of Faculty Excellence (CAFE) supports faculty in the areas of teaching, research, professional development and personal wellness and the office of Instructional Design & Delivery (ID&D) provides professional development for effective pedagogical practices and instructional support for faculty engaged in teaching and learning of online, hybrid and traditional courses. Collaboratively, these offices provide various webinars, workshops, faculty learning communities and initiatives around andragogical and pedagogical best practices (such as Universal Design for Learning; Diversity, Equity & Inclusion; High Impact Practices; Problem-Based Learning; Open Pedagogy, Open Educational Resources, etc.). Additional opportunities are provided through the Faculty Development Committee and our Faculty Learning Communities such as the Distance Education FLC and the Scholarship of Teaching and Learning FLC. Finally, the institution hosts two annual faculty development events – one in August at the beginning of the semester (our most recent focused on Effective Teaching Strategies) and a Teaching & Learning conference in the Spring where faculty present on evidence-based practices and their experiences at SU. ID&D provides support for the campus learning

management system (Canvas) and other instructional software (such as lecture capture, audience response systems) through workshops, video tips, and how-to instructions.

3. <u>Evidence-based practices for distance education, if distance education is offered.</u>

The Engineering program will not be offered 100% via distanced education

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

Salisbury University Libraries have existing resources to support the new Engineering Physics major. In relation to journal and newspaper articles, SU has a number of relevant titles through electronic access via our online database subscriptions, including (but not limited to): Academic Search Complete; Business Source Premier; EconLit; JSTOR; ProQuest Newspapers; Science Direct; and Web of Science. In regards to monographic titles, SU has a significant number of titles that would support this major and is frequently adding more. SU's online catalog provides direct access and borrowing privileges to approximately eleven million items in the libraries of the University System of Maryland and Affiliated Institution libraries (USMAI). In sum, no new library resources are directly required to support the Engineering Physics major.

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

Currently, SU can deliver the program in our existing space and with the current equipment resources. We predict that 17 of the current BS Physics majors will transition to BS Engineering Physics majors in Year 1. Approximately 8 students will enroll in the program in its first year, 9 new students in Year 2, and 10 new students a year going forward, yielding a total program headcount at maturity of about 33 students, producing 7 graduates per year. We anticipate maintain an 85% first year retention rate, aligning with our BS Physics program. At that rate of growth, and to maintain the 30 students per full-time faculty member, we would need to add additional adjunct/contractual teaching support.

SU an institutional electronic mailing system. All students and faculty are given an SU email to utilize for all university correspondence. The university's IT HelpDesk provides technical support to students who need assistance accessing e-mail.

Instructional Design & Delivery provides support for the campus supported learning management system (Canvas) and other instructional software (such as lecture capture, audience response system) through various methods (e.g. workshops, video tips, how-to instructions).

L. Adequacy of Financial Resources as outlined in COMAR 13B.02.03.14.

TABLE 1: RESOURCES for the Engineering Physics B.S. at Salisbury University					
Resources Categories	(Year 1 - FY25)	(Year 2 -FY26)	(Year 3 -FY27)	(Year 4 -FY28)	(Year 5 -FY29)
1.Reallocated Funds	$0	$0	$0	$0	$0
2. Tuition/Fee Revenue (c+g below)	$262,192	$289,137	$305,988	$345,975	$375,924
a. #F.T. Students	24	26	27	30	32
b. Annual Tuition/Fee Rate (FY23 Resident rate)*	$10,638	$10,851	$11,068	$11,289	$11,515
c. Annual Full Time Revenue (a x b)	$255,312	$282,120	$298,830	$338,674	$368,477
d. # Part Time Students	1	1	1	1	1
e. Credit Hour Rate*	$430	$439	$447	$456	$465
f. Annual Credit Hours	16	16	16	16	16
g. Total Part Time Revenue (d x e x f)	$6,880	$7,018	$7,158	$7,301	$7,447
3. Grants, Contracts, & Other External Sources	$0	$0	$0	$0	$0
4. Other Sources	$0	$0	$0	$0	$0
TOTAL (Add 1 - 4)	$262,192	$289,137	$305,988	$345,975	$375,924

*Figured with a 2% Annual Increase

TABLE 2: EXPENDITURES – for the Engineering Physics B.S. at Salisbury University					
Expenditure Categories	(Year 1 - FY25)	(Year 2 - FY26)	(Year 3 - FY27)	(Year 4 - FY28)	(Year 5 - FY29)
1. Total Faculty Expenses (b + c below)	$100,785	$110,883	$117,730	$133,688	$142,923
a. # FTE	0.69	0.74	0.77	0.86	0.90
b. Total Salary (plus 2% increase each year)	$75,778	$83,371	$88,519	$100,517	$107,461
c. Total Benefits (33% of salary)	$25,007	$27,512	$29,211	$33,171	$35,462
2. Total Administrative Staff Expenses (b + c below)	$19,950	$20,349	$20,756	$21,171	$21,595
a. # FTE	0.125	0.125	0.125	0.125	0.125
b. Total Salary	$15,000	$15,300	$15,606	$15,918	$16,236
c. Total Benefits	$4,950	$5,049	$5,150	$5,253	$5,358
3. Total Support Staff Expenses (b + c below)	$9,576	$10,562	$11,227	$12,787	$13,687
a. # FTE	0.16	0.17	0.18	0.20	0.21
b. Total Salary	$7,200	$7,941	$8,441	$9,614	$10,291
c. Total Benefits	$2,376	$2,621	$2,786	$3,173	$3,396
4. 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	$0	$0	$0	$0	$0
TOTAL (Add 1 - 7)	$130,311	$141,794	$149,713	$167,645	$178,204

M. Adequacy of provisions for evaluation of program as outlined in COMAR 13B.02.03.15.

The Henson School of Science and Technology has a long tradition of assessment and accreditation. Within the Henson School's Departments of Mathematics and Computer Science, Biological Sciences, Geography and Geosciences, Chemistry, and Physics, all faculty members are evaluated every year by their department chairs and degree programs undergo comprehensive review every seven years. With guidance from SU's University Analysis, Reporting, and Assessment, course and program-based assessments are being developed at the start. Thus, the curriculum, program faculty and other resources, and student learning outcomes will be routinely evaluated through the annual and periodic review assessment cycles. In addition, once the B.S. Engineering Physics program is launched, the program and courses will be evaluated using student surveys and program committee reviews on a regular basis. The program may seek ABET accreditation after its initial launch which will require continuous assessment and evaluation.

N. Consistency with the State's minority student achievement goals as outlined in COMAR 13B.02.03.05 and in the State Plan for Postsecondary Education.

Any student meeting the SU admissions requirements can choose to pursue the B.S. in Engineering Physics. The program will work to help all accepted students improve their workplace competitiveness and reach their professional goals, an aim consistent with the State's minority student achievement goals.

More specifically, Strategy 7 of the Maryland State Plan for Postsecondary Education (2017-2021) calls on universities to enhance career advising and planning services and integrate them explicitly into academic advising and planning.[5] The program will reach out to undeclared undergraduate students at Salisbury University to inform them of the educational and career opportunities available with the Engineering Physics major.

Strategy 8 of the State plan calls on universities to "develop new partnerships between colleges and businesses to support workforce development and improve workforce readiness."[6] As the only undergraduate program of its kind in the USM, the B.S. Engineering Physics program will result in new public-private partnerships for students in this program. The program requires that students complete a senior capstone project, and the project can be completed through collaborations with local, state, federal, and private sectors.

O. Relationship to low productivity programs identified by the Commission: The proposed program is not directly related to an identified low productivity program.

P. Adequacy of Distance Education Programs as outlined in COMAR 13B.02.03.22: No distance learning is proposed at this time.

[5] https://bit.ly/2GgJnw8, pg 60
[6] https://bit.ly/2GgJnw8, pg 66

Appendix A
B.S. Engineering Physics - Salisbury University
Course Descriptions

Major Courses

CHEM 121 - GENERAL CHEMISTRY I (4 credit hours)
Study of fundamental laws of chemistry and atomic structure emphasizing quantitative relationships. Prerequisite: Two years high school algebra and chemistry, or CHEM 100. Three hours lecture, one three-hour laboratory per week. Prerequisites: This course assumes an understanding of high school chemistry and algebra.

CHEM 122 - GENERAL CHEMISTRY II (4 credit hours)
Continuation of CHEM 121, including chemical equilibrium, electrochemistry and organic chemistry. Prerequisite: C or better in CHEM 121. Three hours lecture, three hours laboratory per week.

COSC 118 – INTRODUCTORY SCIENTIFIC PROGRAMMING (4 credit hours)
Introduction to program design and development. Programs focus on development of applications for science including applications related to GIS. The object-oriented approach is emphasized throughout. No previous programming experience is required. Three hours lecture, two hours lab per week.

ENGR 100 - INTRODUCTION TO ENGINEERING DESIGN (3 credit hours)
Introduction to the art and science of engineering design. Students work in teams to design, manufacture, assemble and test a product. Examples of products include a postal scale, solar cooker and human-powered water pumping systems. CAD and modeling software will also be used.
Four hours lecture/ activity per week. Pre or Corequisites ENGL 103 and either PHYS 121 or PHYS 221.

ENGR 110 - STATICS (3 credit hours)
The equilibrium of stationary bodies under the influence of various kinds of forces. Forces, moments, couples, equilibrium, trusses, frames and machines, centroids, moment of inertia, beams and friction. Vector and scalar methods used to solve problems. Prerequisite: PHYS 221. Prerequisite/Corequisite: MATH 202. Three hours per week.

ENGR 220 - MECHANICS OF MATERIALS (3 credit hours)
Study stress and deformation of beams, shafts, columns, tanks and other structural, machine and vehicle members. Topics include stress transformation using Mohr's circle, centroids and moments of inertia, shear and bending moment diagrams, derivation of elastic curves, and Euler's buckling formula. Complete design project related to the material. Three hours per week. Prerequisites: ENGR 110, MATH 202.

ENGR 221 – DYNAMICS (3 credit hours)
Systems of heavy particles and rigid bodies at rest and in motion. Force acceleration, work energy and impulse momentum relationships. Motion of one body relative to another in a plane and in space.
Three hours per week. Prerequisites: ENGR 110, MATH 202.

ENGR 232 – THERMODYNAMICS (3 credit hours)
Introduction to the principles of thermodynamics and thermodynamic properties of matter. Topics include the first and second laws of thermodynamics, heat, work, temperature, entropy, enthalpy, cycles, reactions, mixtures, energy balances, and mass balances. A design project related to the material is given.
Three hours per week. Prerequisites: C or better in ENGR 110, MATH 202, PHYS 225.

ENGR 331 - FLUID MECHANICS (3 credit hours)
Introduction to the principles of fluid mechanics. Topics include mass, momentum and energy conservation, hydrostatics, control volume analysis, internal and external flow, boundary layers, and modern measurement techniques. A design project related to the material is given.
Four hours lecture/activity per week. Prerequisites: C or better in ENGR 221, MATH 310 and PHYS 225.

ENGR 332 – HEAT TRANSFER (3 credit hours)
Introduction to the principal concepts and methods of heat transfer. The objectives of this integrated subject are to develop the fundamental principles and laws of heat transfer and to explore the implications of these principles for system behavior; to formulate the models necessary to study, analyze and design heat transfer systems through the application of these principles; and to develop the problem-solving skills essential to good engineering practice of heat transfer in real-world applications. Topics include conduction in solids, convection, radiation and modern measurement techniques. Four hours lecture/activity per week. Prerequisites: ENGR 232.

ENGR 361 – VIBRATIONS, CONTROL, AND OPTIMIZATION (3 credit hours)
Introduction to modeling, analysis and simulation techniques for the design of vibratory systems. Identification and prevention of unwanted oscillations or engineering of the desired oscillations in mechanical systems, civil structures, biomechanical systems and microelectromechanical systems. Topics include modeling of vibratory systems; single degree-of-freedom systems: governing equations, free response, periodic excitations and transient excitation; and multiple degree-of-freedom systems: natural frequencies, mode shapes and forced oscillations. Three hours lecture/activity per week. Prerequisites: ENGR 220, ENGR 221, MATH 311.

ENGR 409 – ACOUSTICS (3 credit hours)
Introduction to the principles of acoustics. Topics include the physics of sound, aeroacoustics, hydroacoustics, passive and active sonar systems, biosonar, architectural acoustics, sound isolation chambers, sound absorption, sound reflection, noise cancellation, underwater communication, cavitation, rectified diffusion, supersonics, and hypersonics. Three hours lecture/activity per week. Prerequisites: C or better in PHYS 225.

ENGR 490 - ENGINEERING CAPSTONE EXPERIENCE (3 credit hours)
Research project in engineering chose, designed and carried out by student with the advice and approval of a faculty member. Actual work may be carried out at off-campus sites. Written report, seminar presentation required. Prerequisites: PHYS 470, 40 credits of physics/engineering (or senior standing), department chair approval. Six hours per week.

MATH 201: CALCULUS I (4 credit hours)
Introduction to analytic geometry, limits, continuity, derivatives of elementary functions, applications of the derivatives. May not receive credit for both MATH 198 and MATH 201. Prerequisite: MATH 140 or equivalent. Four hours per week.

MATH 202 - CALCULUS II (4 credit hours)
Introduction to integrals, infinite series, applications and techniques of integration.
Four hours per week. Prerequisites: C or better in MATH 198 or MATH 201 or equivalent.

MATH 310 - CALCULUS III (4 credit hours)
Arc length, indeterminate forms, Euclidean spaces, functions of several variables, partial differentiation, multiple integrals. Four hours per week. Prerequisites: C or better in MATH 202.

MATH 311 - DIFFERENTIAL EQUATIONS I (4 credit hours)

Solutions of first and second order equations and their applications: separable, exact, homogeneous, linear. Numerical and series solutions of ordinary and partial differential equations.
Four hours per week. Prerequisites: C or better in MATH 202.

PHYS 221 - PHYSICS I (4 credit hours)
Introduction to calculus-based Newtonian mechanics for students majoring in physics, engineering and chemistry. Prerequisite or Corequisite: MATH 201. Six hours lecture/activity per week.

PHYS 223 - PHYSICS II (4 credit hours)
Continuation of introductory physics. Topics include: electrostatics, current and resistance, DC and AC circuit analysis, magnetic fields, induction, electromagnetic waves and geometrical and wave optics.
Six hours lecture/ activity per week. Prerequisites: PHYS 221. Pre or Corequisites: MATH 202.

PHYS 225 - PHYSICS III (3 credit hours)
Continuation of introductory calculus-based physics. Topics include: static equilibrium and elasticity, fluid mechanics, wave motion and thermodynamics. Four hours lecture/ activity per week.
Prerequisites: PHYS 221. Pre or Corequisites: MATH 202.

PHYS 309 – MATHEMATICAL PHYSICS (3 credit hours)
Survey of many important mathematical tools of classical physics. Topics include: coordinate systems, complex algebra, linear algebra, Fourier series, special functions, differential equations and vector calculus. Computer algebra system software is used. Four hours lecture/ activity per week. Prerequisites: PHYS 223, PHYS 313. Pre or Corequisites: MATH 311.

PHYS 311 – ELECTRICAL CIRCUITS AND ELECTRONICS (4 credit hours)
Survey of basic principles of electric circuits and modern electronics. Topics include AC and DC circuits, Thevenin's and Norton's theorems, transient analysis, power supplies, diodes and transistors, operational amplifiers and an introduction to circuit simulation programs. Three hours lecture, three hours laboratory per week. Prerequisites: PHYS 311, PHYS 309

PHYS 313 – INTRODUCTION TO MODERN PHYSICS (3 credit hours)
Survey of physics concepts developed since 1880. Topics include blackbody radiation, photoelectric effect, special relativity, quantization, uncertainty principle and introductory atomic, nuclear and solid state physics. Four hours lecture/ activity per week. Prerequisites: PHYS 225. Pre or Corequisites: MATH 310, PHYS 223.

PHYS 314 – MECHANICS (3 credit hours)
Theory and application of Newtonian mechanics with an introduction to the Lagrange formalism. Major topics include kinematics and dynamics of single particles and systems of particles, rigid bodies, non-inertial reference frames and the simple harmonic oscillator. Four hours lecture/ activity per week. Prerequisites: PHYS 309, PHYS 313.

PHYS 315 – ELECTRICITY AND MAGNETISM (3 credit hours)
Study of electricity and magnetism. Topics include Coulomb's law, electric and magnetic fields, electromagnetic induction, Maxwell's equations and an introduction to electromagnetic waves. Four hours lecture/ activity per week. Prerequisites: PHYS 309, PHYS 313.

PHYS 318 – SEMICONDUCTOR PHYSICS (3 credit hours)
Mathematical treatment of the theory of conduction in solids with particular attention to semiconductors. Topics include band theory of solids, conduction in metals and crystals, intrinsic and extrinsic semiconductors, two-terminal and three-terminal devices. Four hours lecture/ activity per week. Prerequisites: PHYS 309, PHYS 313, MATH 311, CHEM 121.

PHYS 321 – ANALOG ELECTRONICS (3 credit hours)
Study of analog electronic devices and systems. Topics include operational amplifiers, active filters, oscillators and function generators, linear integrated circuits. Four hours lecture/ activity per week. Prerequisites: PHYS 311.

PHYS 322 – DIGITAL ELECTRONICS (4 credit hours)
Study of the basic concepts of digital electronics, with emphasis on modern TTL and CMOS integrated circuits. Topics include gates, combinational and sequential logic circuits, flip-flops, counters, shift registers, multiplexers, decoders and multivibrators. Three hours lecture, three hours laboratory per week. Prerequisites: PHYS 223.

PHYS 413 – COMPUTER ARCHITECTURE AND INTERFACING (3 credit hours)
Architecture, programming and interfacing of one or two representative processors. Instruction sets and assembly language programming. Interfacing of memory and support chips such as USART. Programmable controllers, timers and peripheral I/O devices. Serial and parallel port interfacing. Four hours lecture/ activity per week. Prerequisites: PHYS 311, PHYS 322.

PHYS 470 – SENIOR SEMINAR (1 credit hour)
Senior seminar for physics majors. Introduction to research practices. Preparation for PHYS 490 projects. One hour per week. Prerequisites: 30 credits of physics and/or engineering, or departmental approval.

PHYS 490 – PHYSICS AND ASTRONOMY CAPSTONE EXPERIENCE (3 credit hours)
Research project in one of the areas of physics chosen, designed and carried out by student with the advice and approval of a faculty member. Actual work may be carried out at off-campus sites. Written report, seminar presentation required. Six hours per week. Prerequisites: PHYS 470, 40 credits of physics/engineering (or senior standing), departmental chair approval.

Appendix B

B.S. Engineering Physics - Salisbury University
Curriculum Guide

First Year

Fall Semester (16 credits)	Spring Semester (15 credits)
PHYS 221 (4)	PHYS 223 (4)
MATH 201 (4)	MATH 202 (4)
Communication Through Writing (4)	ENGR 100 (3)
Personal Wellness (4)	First Year Seminar (4)

Second Year

Fall Semester (14 credits)	Spring Semester (14 credits)
PHYS 225 (3)	PHYS 313 (3)
MATH 310 (4)	MATH 311 (4)
ENGR 110 (3)	ENGR/PHYS 1 of 5 (3)
COSC 118 (4)	Human Expression (4)

Third Year

Fall Semester (14 credits)	Spring Semester (17 credits)
CHEM 121 (4)	CHEM 122 (4)
PHYS 309 (3)	PHYS 314 (3)
PHYS 311 (4)	PHYS 315 (3)
ENGR/PHYS 2 of 5 (3)	ENGR/PHYS 3 of 5 (3)
	Humanity in Context (4)

Fourth Year

Fall Semester (14 credits)	Spring Semester (16 credits)
ENGR/PHYS 4 of 5 (3)	ENGR/PHYS 5 of 5 (3)
PHYS 470 (1)	ENGR/PHYS 490 (3)
Social Configurations (4)	Social Issues (4)
Elective (3)	Elective (3)
Elective (3)	Elective (3)

Appendix C
Articulation

PROGRAM ARTICULATION AGREEMENT

Between

Wor-Wic Community College and

Salisbury University

Associate of Science in STEM Transfer, Engineering Concentration to

Bachelor of Science in Engineering Physics

August 2024 through July 2029

This Program Articulation Agreement ("Agreement"), effective this 1st day of August 2024 (“Effective Date”), is by and between Wor-Wic Community College, a community college located in Salisbury, Maryland, and Salisbury University, a constituent institution of the University System of Maryland, an agency of the state of Maryland (hereinafter sometimes referred to individually as a “Party” or “Institution” and collectively as the "Parties" or "Institutions"). This Agreement sets forth the joint curricula and program requirements for the completion of the Associate of Science in STEM Transfer, Engineering Concentration from Wor-Wic Community College and the Bachelor of Science in Engineering Physics at Salisbury University.

RECITALS

Whereas, Wor-Wic Community College and Salisbury University are committed to partnering to expand the educational opportunities and collaborative academic programming of their respective institutions; and

Whereas, the Institutions are committed to providing a smooth transition for students wishing to earn an associate of arts degree and a baccalaureate degree; and

Whereas, the intent of the Institutions is to avoid duplication of curricula, where appropriate, within articulated programs of studies; and

Whereas, the Institutions agree that the educational growth of students and the economic development of the community is better served through cooperative educational planning and optimal utilization of community resources.

Therefore, this Agreement commits the Parties to full support of an articulation process to deliver coursework for students, resulting in the associate of arts degree from Wor-Wic Community College and credit toward the Bachelor of Science in Engineering Physics at Salisbury University. The Parties agree to the following:

I. ACADEMIC REQUIREMENTS

A. The Institutions agree to follow the joint program curriculum and course by course articulation delineated in Appendix 1, which is attached hereto and made a part of this Agreement.

B. Both Institutions will cooperate toward developing, disseminating, and presenting the articulated program information to students.
C. Students who have graduated from Wor-Wic Community College program must first apply to Salisbury University. Once a completed application is received, Wor-Wic Community College graduates who have completed the associate's degree program in Associate of Science in STEM Transfer, Engineering Concentration, with a cumulative grade point average of 2.0 or higher will be granted admission to Salisbury University as an Engineering Physics major.
D. All articulated course credits applied towards satisfying Bachelor of Science in Engineering Physics major requirements earned with a C or better will be accepted for transfer according to the articulation matrix in Appendix 1.
E. Salisbury University shall provide a Checklist for students as a planning tool for completing coursework required for the Bachelor of Science in Engineering Physics major in Appendix 2, attached hereto and made a part of this Agreement.
F. Students intending to transfer are recommended to apply for admission by the priority deadline for the semester for which they intend to enroll.
G. Students are subject to all specific policies pertaining to students admitted to the Salisbury University baccalaureate degree program in Bachelor of Science in Engineering Physics and all other Salisbury University admissions policies and procedures.

II. TERM AND TERMINATION

A. The term of this Agreement commences as of the Effective Date listed herein. This Agreement is based on the present curricula contained herein and in all appendices, and is effective for five (5) years from August 2024 to July 2029.
B. Either Party may terminate this Agreement with notice to the other Party, pursuant to Section III.G below. Upon termination or expiration of this Agreement, the Parties shall develop a process that will reasonably allow students already admitted to and enrolled in joint programming to continue their studies. Neither Party will terminate this Agreement at a time that would deter a "cohort-in-progress" from completing graduation within the originally designated timeframe.

III. GENERAL PROVISIONS

A. Each Institution is responsible for the administration of its respective courses, including content, requirements, faculty, and student services (to include, but not limited to, admissions, financial aid, class registration, etc.).
B. When enrolled in a Salisbury University course, the student is subject to all policies and procedures applicable to Salisbury University students. When enrolled in a Wor-Wic Community College course, a student is subject to all policies and procedures applicable to Wor-Wic Community College students. Additional joint policies and procedures may be adopted and implemented at the discretion of both Parties.
C. The Parties recognize that course scheduling beyond the associate's degree level resides exclusively with Salisbury University and will be coordinated with Wor-Wic Community College

by the designated Salisbury University representative. Where academic calendars differ, the Parties will work together to coordinate class offerings and class schedules.

D. The disclosure of information about individual students is limited by the federal Family Educational Rights and Privacy Act (FERPA). The Parties agree that release of student educational records to each other is conditioned upon the submission of a signed agreement by the student authorizing such release.

E. The Parties agree not to release student information to any third-party without the written consent of the other Party and in compliance with FERPA and any other federal or state of Maryland laws, rules, and regulations, and policies of the Parties.

F. The Parties shall publicize any joint offerings in their respective catalogs, website, and other materials as appropriate. Notwithstanding the foregoing, neither Party may use the names or marks of the other without the prior written approval of the other Party.

G. The Parties shall inform students in their respective programs of the complementary program opportunities available at each other's respective institution, support each other's marketing efforts toward the same, and encourage students to apply to programs consistent with an individual student's interests.

H. Notwithstanding anything in this Agreement to the contrary, both Parties retain full authority over their respective courses, programs, and requirements. Both Parties reserve the right to make changes to their respective courses, programs, and requirements. However, each Party shall give to the other reasonable notice and details of changes to this Agreement and other changes in its courses, programs, and requirements that may affect this Agreement. In the event such changes affect the terms of this Agreement, this Agreement and any of its appendices shall be updated as needed to reflect such changes.

I. The Parties designate the following persons as their respective representatives to coordinate and manage the activities under this Agreement:

Wor-Wic Community College
Kristin Mallory, VP for Academic Affairs
32000 Campus Drive Salisbury,
Maryland 21804

kmallory@worwic.edu (410) 334-2813

Salisbury University
Michael Scott, Dean
Richard A. Henson School of Science and Technology
1101 Camden Avenue
Salisbury, Maryland 21801
msscott@salisbury.edu
(410) 543-6489

J. The designated representatives shall meet as needed, at a mutually agreeable time and location, to discuss various collaborations and other topics of interest to either Institution. A Party may change its representative by giving notice to the other Party.

K. Either Institution may at any time recommend changes to this Agreement. Both Institutions reserve the right to modify the programs as deemed necessary and agree to inform the appropriate representatives of the other Institution of recommended changes. This Agreement may be modified only in writing signed by both Parties.

L. All notices under this Agreement must be in writing; delivered in person, by U.S. mail or by email to the representatives listed above in this Section III.

M. Nothing in this Agreement is intended to form a joint venture between the Parties. Nothing in this MOU is intended to create rights or benefits for any person or entity other than the Parties.

N. This Agreement integrates the entire agreement of the Parties and supersedes any and all prior and/or contemporaneous agreements between the Parties, written or oral, with respect to the subject matter of this Agreement.

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their duly authorized representatives.

Wor-Wic Community College	Salisbury University
_____	_____
Deborah Casey, PhD President	Laurie L. Couch, PhD Provost and Senior Vice President of Academic Affairs
Date: _____	Date: _____