



Division of Academic Programs

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March 10, 2015

Ms. Catherine M. Shultz
Acting Secretary of Higher Education
Maryland Higher Education Commission
6 N. Liberty Street
Baltimore, MD 21201

Dear Ms. Shultz:

Attached for the Commission's review is a new academic program:

AS Mechanical Engineering
HEGIS Code 0910.00; CIP Code 14.1901

While we are submitting this new program electronically (as instructed by the Commission), we are also submitting the original documents via mail with a check for \$850 as required by the Commission's schedule of fees.

Should you have any questions or require additional information, please contact Rebecca Walker, Director of Academic Program Support, at 410-287-6060 ext. 204 or by email at rwalker@cecil.edu.

Sincerely,

A handwritten signature in black ink, appearing to read 'David O. Linthicum'.

David O. Linthicum, Ed.D., ~~CPCM~~
Interim Vice President, Academic Programs

MARYLAND HIGHER EDUCATION COMMISSION
ACADEMIC PROGRAM PROPOSAL

PROPOSAL FOR:

- NEW INSTRUCTIONAL PROGRAM
 SUBSTANTIAL EXPANSION/MAJOR MODIFICATION
 COOPERATIVE DEGREE PROGRAM
 WITHIN EXISTING RESOURCES or REQUIRING NEW RESOURCES

Cecil College
Institution Submitting Proposal

Fall 2015
Projected Implementation Date

Associate of Science
Award to be Offered

Mechanical Engineering
Title of Proposed Program

0910.00
Suggested HEGIS Code

14.1901
Suggested CIP Code

Sciences
Department of Proposed Program

Veronica Dougherty, Ph.D., Chair
Name of Department Head

Rebecca Walker
Contact Name

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443-674-1948
Contact Phone Number

Maury Wilk, Belt 3/10/15
President/Chief Executive Approval
Signature and Date

December 11, 2014

Date
Endorsed/Approved

A. Centrality to institutional mission statement and planning priorities:

The Associate of Science Mechanical Engineering program prepares students to transfer to a four-year institution for continued study in mechanical engineering. Mechanical engineering is one of the core engineering disciplines offering students a wide range of career choices in engineering practice and scientific research as well as non-engineering fields such as business, law, or medicine. Students with a bachelor’s degree in mechanical engineering may continue their education in graduate school or may enter industry.

Founded in 1968, Cecil College is an open-admission, learner-centered institution located in a rural community in Maryland's most northeastern county. The College's mission includes career, transfer, and continuing education coursework and programs that anticipate and meet the dynamic intellectual, cultural, and economic development challenges of Cecil County and the surrounding region. Through its programs and support services, the College strives to provide comprehensive programs of study to prepare individuals for enriched and productive participation in society. The College enrolls approximately 8,500 students in credit and non-credit programs. The proposed The Associate of Science in Mechanical Engineering program will prepare students to transfer to a four-year institution for continued study in mechanical engineering. Mechanical engineering is one of the broadest engineering disciplines. Mechanical engineers design, develop, build, and test mechanical and thermal devices, including tools, engines, and machines.

B. Adequacy of curriculum design and delivery to related learning outcomes consistent with Regulation .10 of this chapter:

**Mechanical Engineering
Associate of Science**

Note: Currently classified as Arts and Sciences Transfer – Mechanical Engineering Option

This program prepares students to transfer to a four-year institution for continued study in mechanical engineering. Mechanical engineering is one of the core engineering disciplines offering students a wide range of career choices in engineering practice and scientific research as well as non-engineering fields such as business, law, or medicine. Students with a bachelor’s degree in mechanical engineering may continue their education in graduate school or may enter industry.

	<i>General Education Requirements</i>	<i>General Education Code</i>	<i>Credits</i>
ARTS/HUM	Arts and Humanities Elective ¹	H	3
EGL 101	Freshman Composition	E	3
EGL 102	Composition and Literature	H	3
MAT 121	Precalculus ²	M	4
MAT 201	Calculus I with Analytic Geometry	M	4
PHY 217	General Calculus Physics I with Lab	SL	4
PHY 218	General Calculus Physics II with Lab	SL	4
SOC SCI	Social Science Electives ³	SS	6

<i>Program Requirements</i>			
CHM 103	General Chemistry I	S	3
CHM 113	General Chemistry I Lab		1
CHM 104	General Chemistry II ⁴	S	3
CHM 114	General Chemistry II Lab ⁵		1
MAT 202	Calculus II with Analytic Geometry	M	4
MAT 203	Multivariable Calculus	M	4
MAT 246	Introduction to Differential Equations	M	3
PHE 101	Introduction to Engineering Design		3
PHE 211	Statics		3
PHE 212	Dynamics		3
PHE 213	Mechanics of Materials		3
PHE 221	Thermodynamics		3

Total Credits Required in Program: 65

¹ Selection may not include EGL designation

² Students placed in MAT 201 or higher Math may replace MAT 121 with MAT, PHY, PHE, CSC or CHM elective(s) **students must satisfy the four credit requirement**

³ Courses must be from two different disciplines

^{4 & 5} Students transferring to Frostburg State University must take (PHY 219 General Calculus Physics III with Lab) as a substitution for CHM 104 (General Chemistry II) and CHM 114 (General Chemistry Lab II)

Course Descriptions

CHM 103 General Chemistry I

General Chemistry I studies the fundamental principles of chemistry including measurement, atomic structure, stoichiometry, energy relationships, chemical bonding, molecular structure, and gases.

3 credits

Pre-requisites: EGL 101, MAT 093

Co-requisite: CHM 113

CHM 113 General Chemistry I Lab

General Chemistry I Laboratory will expose students to proper chemistry laboratory procedures and demonstrate certain principles of chemistry, including accurate measurement and data collection, chemical reactions, stoichiometry, energy relationships via calorimetry, quantitative analysis via spectrophotometry, and the nature of gases. 1 credit

Co-requisite: CHM 103

CHM 104 General Chemistry II

General Chemistry II is a continuation of General Chemistry I. Topics include solutions, chemical kinetics, chemical equilibrium, acids and bases, equilibria in aqueous solution, chemical thermodynamics, electrochemistry, nuclear chemistry, and coordination chemistry. 3 credits

Pre-requisites: CHM 103, CHM 113

Co-requisites: CHM 114, MAT 121

CHM 114 General Chemistry II Lab

General Chemistry II Laboratory extends students' exposure to proper laboratory procedures related to the following areas: qualitative analysis, chemical reactions in aqueous solution, acid-base titration, rate studies, chemical equilibrium, electrochemistry, oxidation-reduction titration, and chemical synthesis.

1 credit

Pre-requisites: CHM 103, CHM 113

Co-requisite: CHM 104

EGL 101 Freshman Composition

Freshman Composition teaches students the skills necessary to read college-level texts critically and to write effective, persuasive, thesis-driven essays for various audiences. The majority of writing assignments require students to respond to and synthesize texts (written and visual) through analysis and/or evaluation. Students also learn how to conduct academic research, navigate the library's resources, and cite sources properly. The course emphasizes the revision process by integrating self-evaluation, peer response, small-group collaboration, and individual conferences. Additionally, students are offered guided practice in appropriate style, diction, grammar, and mechanics. Beyond completing multiple readings, students produce approximately 5,000 words of finished formal writing in four-five assignments, including a 2,000-word persuasive research essay. 3 credits

Pre-requisites: C or better in COL081 and EGL093 or equivalent skills assessment

EGL 102 Composition and Literature

Composition and Literature introduces the students to the genres of fiction, poetry, and drama in order to gain a fuller understanding and appreciation of these literary forms. Several brief compositions and a term paper will be assigned. 3 credits

Pre-requisite: Grade of C or better in EGL 101

MAT 121 Precalculus

Precalculus (M) prepares the student for the study of calculus, discrete mathematics, and other mathematics intensive disciplines through the study of algebraic, exponential, logarithmic, and trigonometric functions. Topics include functions, laws of logarithms, trigonometric and inverse trigonometric functions, trigonometric identities, solutions of trigonometric equations, the Laws of Sines and Cosines, and polar coordinates. A problem solving approach utilizes applications and a graphing calculator throughout the course. 4 credits

Pre-requisites: Grade of C or better in MAT093, EGL093

MAT 201 Calculus I with Analytic Geometry

MAT 202 Calculus II with Analytic Geometry
Calculus I with Analytic Geometry (M) introduces students to the mathematical techniques for limits (including L'Hospital's Rule), differentiation, and integration of algebraic, trigonometric, inverse trigonometric, logarithmic, exponential, hyperbolic, and inverse hyperbolic functions. Applications of differentiation and integration are studied. 4 credits

Pre-requisites: EGL 093 and grade of C or better in MAT 121

MAT 203 Multivariable Calculus

Multivariable Calculus (M) provides the student with a study of three-dimensional space, introduction to hyperspace, partial differentiation, multiple integration, vectors in a plane, and topics in vector

calculus to include Green's Theorem, Stokes' Theorem, and the divergence theorem. Knowledge of a computer algebra system, MAPLE, is expanded. 4 credits

Capstone Project: There will be a capstone project required in this course. The capstone project will give students the opportunity to choose from a list of projects or one that a student suggests with the approval of the instructor. The project must include elements of all previous math classes, especially Calculus II, Multivariable Calculus, and Introductory Statistics.

Pre-requisite: MAT 202

MAT 246 Introduction to Differential Equations

Introduction to Differential Equations (M) introduces the basic techniques for solving and/or analyzing first and second order differential equations, both linear and nonlinear, and systems of differential equations. The use of a mathematical software system is an integral part of the course. 3 credits

Pre-requisite: Grade of C or better in MAT 202

PHE 101 Introduction to Engineering Design

Introduction to Engineering Design is a project-based course that introduces the product development process. Working in teams and using modern computer tools, students complete the design of a complex system requiring problem specification, product research, product design, product modeling and analysis, fabrication, testing, redesign, and product presentation. Engineering fundamentals such as units and dimensions, CAD modeling and analysis, creation of engineering drawings, data analysis with spreadsheets, properties of materials, mechanics, heat transfer, circuits, computer programming and other engineering topics are studied. 3 credits

Co-requisite: MAT 201

PHE 211 Statics

Statics will introduce students to the study of the equilibrium of bodies (both solids and fluids) under the influence of various kinds of loads. Forces, moments, couples, equilibrium of a particle, equilibrium of a rigid body, analysis of trusses, frames and machines, internal forces in structural members, friction, center of gravity, centroids, composite bodies, and fluid pressure are topics which will be considered. Vector and scalar methods are used to solve problems. Conceptual understanding will be integrated with problem-solving. 3 credits

Pre-requisites: PHY 217 and MAT 202

PHE 212 Dynamics

Dynamics will introduce students to the study of 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 are topics which will be considered. Vector and scalar methods are used to solve problems. Conceptual understanding will be integrated with problem-solving. 3 credits

Pre-requisite: PHE 211

PHE 213 Mechanics of Materials

Mechanics of Materials will introduce students to the study of 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. Conceptual understanding will be integrated with problem-solving. 3 credits

Pre-requisite: PHE 211

PHE 221 Thermodynamics

Thermodynamics will introduce students to the interaction between heat and mechanical energy in materials and machines and its application to mechanical systems. Topics covered include first and second laws of thermodynamics, cycles, reactions, and mixtures, fluid mechanics, heat transfer, fluid-energetics laboratory, and the application of these engineering sciences to energy systems design.

Conceptual understanding will be integrated with problem-solving. 3 credits

Pre-requisites: PHE 211 and PHY 218

PHY 217 General Calculus Physics I with Lab

General Calculus Physics I with Lab (SL) is the first course of a three semester calculus-based general physics course sequence. This course provides a comprehensive introduction for students interested in physics and engineering. Topics related to mechanics include linear and rotational kinematics and dynamics, energy and momentum conservation, collisions, equilibrium of rigid bodies, and oscillations. Problem-solving and laboratory skills will be emphasized in this course. Previous exposure to physics principles and strong mathematics skills are highly recommended. 4 credits

Pre-requisite: MAT 121

Co-requisite: MAT 201

PHY 218 General Calculus Physics II with Lab

General Calculus Physics II with Lab (SL) is the second course of a three semester calculus-based general physics course sequence. This course provides a comprehensive introduction to students interested in physics and engineering. Topics include: thermodynamics, electricity, magnetism, and radioactivity.

Problem-solving and laboratory skills will be emphasized in this course. 4 credits

Pre-requisite: PHY 217 with a C or better

Co-requisite: MAT 202

Educational objectives and intended student learning outcomes:

As a result of completing the Associate of Science degree in Mechanical Engineering, students will

- Apply knowledge of mathematics, science, and engineering.
- Demonstrate the ability to conduct, analyze and interpret experiments and apply experimental results to improve processes.
- Identify, formulate, and solve engineering problems.
- Demonstrate an understanding of both thermal and mechanical systems areas.
- Demonstrate the ability to analyze and design practical mechanical systems.
- Use the techniques, skills, and modern engineering tools necessary for engineering practice.
- Apply principles of engineering, basic science, and mathematics (including multivariate calculus and differential equations) to model, analyze, design, and realize physical systems, components or processes.
- Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- Demonstrate an understanding of professional and ethical responsibility.

C. Critical and compelling regional or Statewide need as identified in the State Plan:

The proposed program meets the critical and compelling regional and statewide need outlined in Goal 5 of Maryland Ready: 2013 Maryland State Plan for Postsecondary Education – “Maryland will stimulate economic growth, innovation, and vitality by supporting a knowledge-based economy, especially through increasing education and training and promoting the advancement and commercialization of research.”

As noted in the Maryland State Plan 2013, employers seek employees who have high tech skills, and “it is critical that Maryland address workforce needs.”

D. Quantifiable & reliable evidence and documentation of market supply & demand in the region and State:

According to the U.S. Bureau of Labor Statistics, employment of mechanical engineers is projected to grow 5 percent from 2012 to 2022. “Job prospects may be best for those who stay informed regarding the most recent advances in technology. Mechanical engineers can work in many industries and on many types of projects. As a result, their growth rate will differ by the industries that employ them.

“Mechanical engineers should experience faster than average growth in architectural, engineering, and related services as companies continue to contract work from these firms. Mechanical engineers will also remain involved in various manufacturing industries—specifically, transportation equipment and machinery manufacturing. They will be needed to design the next generation of vehicles and vehicle systems, such as hybrid-electric cars and clean diesel automobiles. Machinery will continue to be in demand as machines replace more expensive human labor in various industries. This phenomenon in turn should drive demand for mechanical engineers who design industrial machinery. Mechanical engineers are projected to experience faster than average growth in oil and gas extraction because of their knowledge and skills regarding thermal energy.”¹

According to the Maryland Department of Labor, Licensing, and Regulation, a total of 357 openings for mechanical engineers were forecast for 2013-2015, and a total of 2,139 openings for engineers in general.²

An online search of the job search website *Indeed* on March 4, 2015 using the terms “mechanical engineer” and “Maryland” produced a total of 853 job openings.³ A similar search on the website *Monster*, produced a total of 981 job openings.⁴

¹ Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, 2014-15 Edition, Mechanical Engineers, on the Internet at <http://www.bls.gov/ooh/architecture-and-engineering/mechanical-engineers.htm> (visited March 04, 2015).

² Maryland Department of Labor, Licensing, and Regulation, Division of Workforce Development and Adult Learning, *Architecture and Engineering Occupations - Maryland Occupational Projections - 2013-2015*, on the Internet at <http://www.dllr.state.md.us/lmi/iandoprojshort/occgrou17short.shtml>.

³ Indeed Website, Mechanical Engineer Jobs in Maryland, on the Internet at <http://www.indeed.com/jobs?q=Mechanical+Engineer&l=Maryland>.

⁴ Monster Website, Mechanical Engineer Jobs in Maryland, on the Internet at <http://jobs.monster.com/v-engineering-q-mechanical-engineer-jobs-l-maryland.aspx>.

E. Reasonableness of program duplication:

A search of the Maryland Higher Education Commission program inventory database for CIP Code 14.1901 (the code that corresponds with Mechanical Engineering) did not reveal any other Associate of Science degree programs in Mechanical Engineering in the state.

However, the following Associate Degree programs are available in the state under the CIP Code 14.0101 **Engineering, General**:

Institution	Program Name	Degree Offered	Taxonomy
Allegany College of Maryland	ENGINEERING TRANSFER	Associate Degree	494001
Anne Arundel Community College	ENGINEERING TRANSFER	Associate Degree	494001
Baltimore City Community College	ENGINEERING TRANSFER	Associate Degree	494001
College of Southern Maryland	ENGINEERING TRANSFER	Associate Degree	494001
Community College of Baltimore County	ENGINEERING	Associate Degree	494001
Community College of Balt County	ENGINEERING TRANSFER CERTIFICATE	Lower Division Certificate	494001
Hagerstown Community College	PRE-ENGINEERING	Associate Degree	494001
Harford Community College	ENGINEERING TRANSFER	Associate Degree	494001
Howard Community College	ENGINEERING TRANSFER	Associate Degree	494001
Montgomery College-All Campuses	ENGINEERING SCIENCE	Associate Degree	494001
Prince George's Community College	ENGINEERING	Associate Degree	494001
Washington Adventist University	ENGINEERING	Associate Degree	494001

F. Relevance to Historically Black Institutions (HBIs)

No impact is anticipated on the state’s historically black institutions.

G. If proposing a distance education program, please provide evidence of the [Principles of Good Practice](#) (as outlined in COMAR 13B.02.03.22C).

Not applicable.

H. Adequacy of faculty resources (as outlined in COMAR 13B.02.03.11).

The Engineering faculty are active in scholarship and professional development, annually attending and presenting at local, regional, and national conferences. Engineering faculty members participate on statewide committees and discipline-specific listservs; they also serve on many internal committees that cross disciplines and divisions. All of these factors influence the department's review and development of its courses.

Faculty Member	Credentials	Status	Courses Taught
Josiah Bancroft Assistant Professor of English	M.A. Literature, Virginia Commonwealth University	Full-time	EGL 102 Composition and Literature
Brandy Biddy	M.S. Johns Hopkins University	Full-time	MAT 246 Introduction to Differential Equations
John Climent, Professor of Mathematics	Ph.D., University of Delaware	Full-time	MAT 203 Multivariable Calculus
Jack Cohen Lecturer, Sociology and Psychology	M.Div. Eastern/Palmer Theological Seminary	Full-time	Social Science Electives
Kristy Erickson, Professor of Mathematics	Ed.D. Walden University	Full-time	MAT 121 Precalculus MAT 201 Calculus I with Analytic Geometry MAT 202 Calculus II with Analytic Geometry
Craig Frischkorn Professor of English	Ph.D., English State University of New York at Buffalo	Full-time	EGL 101 Freshman Composition
Anand Patel Assistant Professor of Engineering and Physics	M.S. Mechanical Engineering, University of Maryland Baltimore County	Full-time	PHE 101 Introduction to Engineering Design PHE 211 Statics PHE 212 Dynamics PHE 213 Mechanics of Materials PHE 221 Thermodynamics
Gail Wyant	M.S., State University of New York at Stony Brook	Full-time	PHY 217 General Calculus Physics I with Lab PHY 218 General Calculus Physics II with Lab

I. Adequacy of library resources (as outlined in COMAR 13B.02.03.12).

Cecil College's Cecil County Veterans Memorial Library is a member of Maryland Digital Library (MDL), and the Maryland Community College Library Consortium (MCCLC). Cecil College's Library has reciprocal borrowing privileges with other community college libraries throughout the State of Maryland.

Students enrolled in the AS Mechanical Engineering Program will receive a library orientation upon faculty request. During orientation students will learn how to obtain a Cecil College library card, how to access Cecil College Library databases and LibGuides on and off campus, and how to submit requests for inter-library loans. In addition, after a pending articulation agreement is implemented, students enrolled in the program will have access to and Frostburg State University's Lewis J. Ort Library, which contains over half a million items including books, periodicals, audio-visual materials, maps, and art prints, US and Maryland government information resources. In addition, the library subscribes to 60 electronic databases providing access to 20,000 full-text electronic journals.

The library subscribes to the following databases EBSCOhost's Academic Search Complete, Military & Government Collections and EBSCOhost's ebook Community College Collection. The library will develop and create a LibGuide specifically for the Mechanical Engineering Program with links to relevant databases, websites, reference books, ebooks and professional associations.

Cecil College Library will collaborate with the department head and faculty to acquire the appropriate resources for the Mechanical Engineering Program in print and online.

J. Adequacy of physical facilities, infrastructure and instructional equipment (as outlined in COMAR 13B.02.03.13)

The Engineering Program maintains and supports labs and equipment for all engineering disciplines. In fall 2014, the College opened a new Engineering and Math Building with state of the art equipment and facilities to support its programs. The current facilities are adequate to initiate the Associate of Science in Mechanical Engineering Degree Program.

- The Machine Shop is a spacious room equipped with materials and equipment for students to work on a variety of lab experiments and projects, providing them with technical skills and hands-on experience.
- The Printer Room is equipped with a 3-D printer that allows students to import and print designs from CAD software.
- The Engineering labs are equipped with computers and laptops that allow engineering students to access CAD software like AutoCAD and SolidWorks, programming languages like C, C++ and MATLAB, along with other software like MS Word, MS Excel and MS PowerPoint.

K. Adequacy of financial resources with documentation (as outlined in COMAR 13B.02.03.14)

See next page.

**Cecil College – AS Mechanical Engineering
Projected Revenues**

TABLE 1: RESOURCES					
Resource Categories	Year 1	Year 2	Year 3	Year 4	Year 5
1. Reallocated funds	N/A	N/A	N/A	N/A	N/A
2. Tuition/Fee revenue (c+g below)	\$66,900	\$75,500	\$89,400	\$100,000	\$119,200
a. Number of F/T students	13	15	18	20	24
b. Annual Tuition/Fee Rate	\$100/credit	\$100/credit	\$100/credit	\$100/credit	\$100/credit
c. Total F/T Revenue (a * b)	\$42,900	\$49,500	\$59,400	\$66,000	\$79,200
d. Number of P/T students	12	13	15	17	20
e. Credit Hour Rate	\$100/credit	\$100/credit	\$100/credit	\$100/credit	\$100/credit
f. Annual Credit Hour Rate	N/A	N/A	N/A	N/A	N/A
g. Total P/T Revenue (d * e * f)	\$24,000	\$26,000	\$30,000	\$34,000	\$40,000
3. Grants, Contracts, & Other External Sources	0	0	0	0	0
4. Other sources:					
Student Dev. Fees	\$5,352	\$6,040	\$7,152	\$8,000	\$9,536
Registration Fees	\$3,750	\$4,200	\$4,950	\$5,550	\$6,600
Total (Add 1-4)	\$76,002	\$85,740	\$101,502	\$113,550	\$135,336

Assumptions:

- Tuition revenue is conservatively projected based on an in-county rate of \$100/credit
- Full-time students complete 33 credits per year on average; Year one tuition revenue = 13 students * 33 credits = 429 total credits; 429 credits * \$100/cr. = \$42,900
- Part-time students complete 20 credits per year on average; Year one tuition revenue = 12 students * 20 credits = 240 credits * \$100/cr. = \$24,000
- Student Development Fee is \$8/credit hour; Fees for year one = 669 total credits * \$8 = \$5,352
- Registration fee = \$75/semester; registration fees are assumed to be two semesters each year or \$150, but students may elect to also take courses in the summer; Year one registration fees = 25 students * \$150 = \$3,750

TABLE 2: EXPENDITURES					
Expenditure Categories	Year 1	Year 2	Year 3	Year 4	Year 5
1. Faculty (b + c below)	\$41,198	\$41,869	\$42,551	\$43,244	\$43,949
a. #FTE	2	2	2	2	2
b. Total Salary	\$30,961	\$31,426	\$31,897	\$32,376	\$32,861
c. Total Benefits	\$10,237	\$10,443	\$10,654	\$10,868	\$11,088
2. Administrative Staff (b + c below)	0	0	0	0	0
a. #FTE	0	0	0	0	0
b. Total Salary	0	0	0	0	0
c. Total Benefits	0	0	0	0	0
3. Support Staff (b + c below)	0	0	0	0	0
a. #FTE	0	0	0	0	0
b. Total Salary	0	0	0	0	0
c. Total Benefits	0	0	0	0	0
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)	\$41,198	\$41,869	\$42,551	\$43,244	\$43,949

Assumptions:

- Programs will be implemented with existing faculty resources and administrative staff, so there are no new expenses for personnel. Only faculty salaries for full-time faculty in the Engineering area are included in the Expenditures Table as other full-time faculty members listed above for particular courses are budgeted through departments that are not responsible for this program. Engineering faculty salaries are allocated at 1/3 time (33%) and 1/5 time (20%).
- Library resources and equipment are budgeted in the operating budget on an ongoing basis.
- Salaries are forecasted to increase @ 1.5% each year
- Health benefits are forecasted to increase @ 2.5% each year

L. Adequacy of provisions for evaluation of program (as outlined in COMAR 13B.02.03.15).

Individual course assessment reports document student learning outcomes which are taken directly from the course syllabus. The Assessment Committee has established a rubric for course assessment reports which requires documentation of desired learning outcomes (taken from the syllabus), indicators of student learning outcomes, direct and indirect methods of assessment, quantitative and qualitative data on student performance, and how assessment results will be used to further improve student learning outcomes in the future. Each report is reviewed to ensure that it meets the guidelines established by the Assessment Committee. Reports are collected for one-third of all courses offered during the fall and spring semesters each academic year, resulting in a review of all courses within 36 months.

Faculty members are evaluated each and every semester by students enrolled in their courses. The College uses an electronic survey process (Evaluation Kit) and students are required to complete the evaluation within a specified time frame at the end of the semester or they are locked out of the learning management system (Blackboard) until they complete the survey. This has resulted in a very high response rate for all courses.

The College has an established Program Review Policy and a Program Review and Assessment Plan. Both of these documents have been endorsed by the Faculty Senate and approved by the Board of Trustees. One-fifth (20%) of the programs are reviewed each year so that all programs are reviewed on a five-year cycle. A repository, which is accessible to all faculty members, is kept for all Program Review and Assessment documents. Additionally, a database has been established to track the status of recommended changes/revisions to programs.

Faculty members are assessed in the classroom by the Dean of Academic Programs each year for their first five years at Cecil College and every three years thereafter.

All faculty members are contractually obligated to complete an annual report: inclusive of assessment results.

M. 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).

Cecil College has qualified professional staff in the student advising and student support areas. Advisors seek and support other-race students consistent with the core values of the College, which encompass diversity and inclusiveness. In addition, the College has adopted a Strategic Initiative to "create educational opportunities for a diverse community of learners." The College plans to employ broad recruitment efforts to attract a racially diverse student body. Statements of non-discrimination are included in College publications and will appear in any marketing pieces for the program. In addition, the Director of Minority Student Services will assist in marketing and referring students to the new program.

N. Relationship to low productivity programs identified by the Commission:

Not applicable.