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Chesapeake College

December 11, 2018

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

Dear Dr. Fielder:

Attached, please find Chesapeake College's Academic Program Proposal to offer a new Agriculture area of concentration under our Liberal Arts and Science pathway. This program builds upon the college's existing A.A.S. degrees in Agriculture (which include concentration areas in both production and sustainability) and is specifically designed for transfer to four-year programs in general agricultural studies. It is the result of intentional focus groups consisting of local farmers, members of agricultural support professions, agricultural educators, extension agents, and business persons. Characterized by Liberal Arts & Sciences transfer requirements, training in fundamental science concepts, and flexibility, this program will allow students to prepare for transfer to a variety of programs at receiving four-year institutions.

Chesapeake College is pleased to offer this program using current faculty expertise and institutional resources. A check in the amount of $250 will be mailed to your office.

If you have any questions or require additional information, please contact Marci Leach, Director of Program Development, at mleach@chesapeake.edu or 410-827-5824.

Sincerely,

David Harper, Jr.
Interim Vice President for Workforce and Academic Programs

Office Use Only: PP#

MHEC
Creating a state of achievement

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

Institution Submitting Proposal	Chesapeake College

Each action below requires a separate proposal and cover sheet.

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

Payment Submitted:	Yes / No	Payment Type:	R*STARS Check#	Payment Amount: $ 250	Date Submitted:

Department Proposing Program	Liberal Arts and Sciences	
Degree Level and Degree Type	Associates of Arts	
Title of Proposed Program	Liberal Arts and Sciences – Agriculture Concentration Degree	
Total Number of Credits	60	
Suggested Codes	HEGIS: 4910.01	CIP: 24.0101
Program Modality	● On-campus	Distance Education (*fully online*) Both
Program Resources	● Using Existing Resources	Requiring New Resources
Projected Implementation Date	Fall ● Spring	Summer Year:
Provide Link to Most Recent Academic Catalog	URL:http://ecatalog.chesapeake.edu	
Preferred Contact for this Proposal	Name: Marci L.S. Leach	
	Title: Director of Program Development	
	Phone: 410-827-5824	
	Email: mleach@chesapeake.edu	
President/Chief Executive	Type Name: David A. Harper, Jr.	
	Signature: [signature]	Date: 12/19/18
	Date of Approval/Endorsement by Governing Board:	

Revised 11/2018

MARYLAND HIGHER EDUCATION COMMISSION

NEW ACADEMIC PROGRAM

LIBERAL ARTS AND SCIENCE AGRICULTURE TRANSFER PATHWAY

A. Centrality to institutional mission statement and planning priorities:

The Chesapeake College Liberal Arts and Sciences Agriculture Concentration Transfer Pathway is designed to prepare students to transfer to a four-year institution to continue preparation for a career in general agricultural sciences, including agriculture, environmental science, animal sciences and other related science disciplines. The program includes a core curriculum focused on principles of biology and chemistry, with agriculture and general education electives. This plan allows students to obtain the fundamental science concepts that future science courses will build upon, while allowing flexibility through free electives for students to select courses to maximize transferability to the specific program at the intended four-year institution. The curriculum demands significant practical, technical and communication skills. Learning takes place in the classroom, laboratory, field, and the library/academic support centers. Students should consult with an academic advisor throughout the process of planning an appropriate program.

The Chesapeake College 2014-2018 Strategic Plan explicitly calls for transforming the student learning experience, notably by, "incorporate[ing] global concepts… into the curriculum," and "Integrate[ing] experiential learning into the curriculum to give students the opportunity to combine classroom learning and real-world settings." The proposed Transfer Pathway in Agriculture does both of these things. Our rural campus hosts multiple practical learning resources for agriculture students, including a high tunnel (small greenhouse) and 55 acres of agricultural land, as well as cutting-edge storm water remediation appropriate to our land use patterns, and renewable energy installations. At the same time, we recognize the global reach of agriculture, and the global market into which regionally grown products must enter.

Prior to the development of the program, Chesapeake College conducted a focus group of local farmers, members of agricultural support professions, agricultural educators, extension agents, and business persons, who agreed that agriculture coursework was necessary for, and beneficial to, the Eastern Shore region we serve. The focus group noted that agriculture is a viable career choice in this region. For students who wish to pursue degrees in agriculture, but who may not want to leave the region after high school, the transfer pathway eases them into, and prepares them for success in, baccalaureate study at 4-year colleges and universities.

Students from all high school CASE (Curriculum for Agricultural Science Education) programs in our five-county support region indicate a desire to continue with agriculture education at the college level and expressed a desire to stay in the local region if a program were to be offered.

The program will be implemented with existing administrative staff and campus resources. Campus resources are funded through the College's general operating budget each year. The dedicated faculty member, Nicole Barth, is currently utilizing 30% of her time teaching dedicated Agriculture courses and 70% teaching related General Education courses. This ratio allows for a shift in teaching responsibilities as the program grows.

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

The 5-county Eastern Shore region served by Chesapeake College is overwhelmingly rural and agricultural. Chesapeake serves approximately 20% of the land area of the state, but only about 3% of its population. In that region, agriculture is the backbone of the regional economy and its culture, and careers in agriculture represent local jobs to which our graduates can, and do, aspire.

The agricultural industry is undergoing a period of rapid change, for which new educational approaches and new learning goals must be established. Challenges from changing consumer demand, changing climate, and evolving regulations couple with new risks inherent in the global marketplace. Agriculture is also becoming increasingly reliant upon technology, both to increase product yield and to avoid ecological damage. Consumers, newly aware of the importance of local agriculture, are forcing market-based changes on farm practices, including both the crops grown and the methods used to grow them. Now, more than at any time in the past half-century, farmers are at the epicenter of national conversations about food security and community self-reliance, environmental risks, and public health. Agricultural education at the Associate's and Bachelor's levels must adapt to these new forces with which the next generation of farmers must contend.

At the same time, because new financial models and vendors have entered the agricultural marketplace, new farmers and agricultural professionals must retain, and improve upon, the financial literacy of their forebears. Business practices in food and agriculture are evolving in response to consumer demands, regulations, and global economic forces; tomorrow's farmers must be literate in international finance, economics, and policy. This demand also highlights agricultural professionals' need for higher education.

Finally, as the region, and the globe, begin to include the agriculture and agribusiness industries in planning for climate change mitigation and resilience, the coming generation of farmers will need to be increasingly scientifically literate. The most efficient way for emerging agricultural professionals to gain

the requisite background knowledge, and the critical thinking ability to evaluate and apply new information, is higher education.

The program proposed, is a transfer degree, which prepares our graduates for transfer to baccalaureate study in agriculture at the same time allowing them to take advantage of the cost savings afforded by completing the first two years of the degree at Chesapeake College. The chart below compares tuition at neighboring four-year institutions with the cost of attending Chesapeake College.

Institution	Cost/credit 2018 [1]	Cost/year/FT [2]	Cost/60 credits	Savings over 2 years
Chesapeake College	$157	$4,710	$9,420	___
University of MD – Eastern Shore	$276	$8,302	$16,604	$7,184
University of MD – College Park	$353	$10,595	$21,190	$11,770

The newly released 2017-2021 Maryland State Plan for Post-Secondary Education has identified several key strategies. The Agriculture Transfer Pathway supports the following strategies:

1. **Strategy 1**: "Continue to improve college readiness among K-12 students, particularly high school students", "Early Access to College". Chesapeake College has aligned the Agriculture Transfer curricula with that of the Curriculum for Agriculture (CASE) from the five counties' that are served through the college, Caroline, Dorchester, Kent, Queen Anne's and Talbot. The CASE curriculum is a Career Cluster as identified by the MSDE (MHEC, pg. 33). Students who successfully complete the four core high schools courses, earning a grade of "B" or higher, can earn three college credits for this work upon the completion of the next sequential step at Chesapeake College.
2. **Strategy 4**: "Continue to ensure equal educational opportunities for all Marylanders by supporting postsecondary institutions", "Practices that Improve Completion: Structured Schedules". The Agriculture Transfer program is designed for four semesters (two year) completion with coursework aligned to accommodate pre-requisite courses within a sequence. This allows for a seamless process through the program to increase the chance for student success and to reduce the overall cost of attaining the credential.

[1] Cost/credit/2018 assumes In-State and In-County Tuitions & Fees.
[2] Cost/year/FT assumes 15 credit semester/ 30 credit year – Tuition & Fees

3. **Strategy 6**: "Improve the student experience by providing better options and services that are designed to facilitate prompt completion of degree requirements", "Maximizing Statewide Transfer". Among the strongest job projections in agriculture and farming are secondary-school instructors in agriculture. The Maryland Department of Labor, Licensing, and Regulation projects that the need for agriculture teachers will grow 25% by 2024[3]. The proposed transfer pathway directly addresses this need; secondary teachers require a bachelor's degree, and we propose to prepare students for transfer to baccalaureate programs. Additionally, agriculture students interested in teaching careers can take advantage of courses in Chesapeake College's Secondary Education A.A.T programs, thereby preparing themselves for teaching careers while growing their agricultural knowledge base. The proposed Transfer Pathway in Agriculture explicitly addresses the need for transfer among institutions. Students beginning study at Chesapeake College can use this pathway, and the courses therein, to prepare for transfer to baccalaureate institutions. Both the University of Maryland at College Park and the University of Maryland Eastern Shore have bachelor's programs in agriculture. The establishment of the Transfer Pathway at Chesapeake College can serve as the foundation for articulation agreements that will help our graduates transfer to those institutions. Articulation agreements also help guarantee that transfer students' community-college credits are fully accepted by the receiving institution, and help guide graduates' placement into appropriate 3rd- and 4th-year courses.
4. **Strategy 7**: Enhance career advising and planning services and integrate them explicitly into academic advising and planning", "Improving Career Advising". Chesapeake College has invested significant internal resources to improve the student advising experience. Career Coach is an innovative program designed to help students align their career vision with an educational pathway. Through this interactive software, students assess their strengths and interests and explore the various careers that others, with their similar preferences, have participated in. The site includes salary data, required educational level and the career pathways within the college. Faculty members, are "Expanding and Promoting Internships"- The proposed Transfer Pathway includes an internship among the courses required for the degree. That internship will place students directly into the agricultural workforce, in a supervised fashion, and helps translate real-world learning into academic credit. The inclusion of an internship was vigorously supported by the Eastern Shore stakeholders with whom Chesapeake College spoke, and will serve to integrate our students into the workforce. "Supporting Faculty and Staff". Chesapeake College recently

[3] http://dllr.maryland.gov/lmi/iandoproj/maryland.shtml

reorganized its academic divisions, resulting in a unified STEM Department that is home to Agriculture programs and faculty. The integrative nature of agriculture, which is rooted in science but also demands economics, engineering, finance, and policy, makes the discipline a good example of STEM programming. The proposed A.A. Transfer Pathway in Agriculture will, we predict, increase the number of students entering agricultural study, by serving as a complement to the practically oriented Agriculture A.A.S degree program. In turn, this will increase the number of Eastern Shore students in STEM programs by providing both a practical, hands-on degree pathway and a more traditional academic degree pathway.

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

The proposed Transfer Pathway enhances Chesapeake College's support for multiple types of careers in agriculture. Chesapeake's existing A.A.S. in Agriculture prepares students to enter the workforce directly, either on-farm or in agriculture support industries. The addition of the transfer pathway provides opportunities for students to prepare for careers that demand a bachelor's degree. Both programs were developed with support from the regional agriculture industry on the Eastern Shore and directly address the needs identified thereby.

Agriculture and related careers are projected to experience statewide growth through 2024[4] (http://dllr.maryland.gov/lmi/iandoproj/maryland.shtml):

[4] http://dllr.maryland.gov/lmi/iandoproj/maryland.shtml

Maryland Long Term Occupational Projections (2014 - 2024)

Occupation (keyword search)

Agricult*

Number of Openings -793 504,548

Percent Change -51.05% 191.67%

Occupation	2014	2024	Change	Pct Change
Agricultural Engineers	32	39	7	21.88%
Agricultural Equipment Operators	251	276	25	9.96%
Agricultural Inspectors	204	219	15	7.35%
Agricultural Sciences Teachers, Postsecondary	302	378	76	25.17%
Agricultural Workers	3,764	3,941	177	4.70%
Agricultural Workers, All Other	124	130	6	4.84%
Agricultural and Food Science Technicians	361	418	57	15.79%

Labor-market trends through 2024 indicate that demand is particularly strong among professions that require a bachelor's degree: engineers, inspectors, teachers, and technicians. While on-farm are projected to grow by 4.7 – 4.8%, job growth for baccalaureate degree holders is projected to range from 7 – 25%, with the biggest growth among Agricultural Science teachers in post-secondary educational institutions.

These projections confirm an independent labor-market analysis commissioned by Chesapeake College in 2015, in which the need for agricultural professionals rose to the institution's attention. In that survey, 30% of employers identified "Environmental and Mechanical Sciences" (which explicitly listed agriculture) as potential training needs for their employees, and that category was among the top 10 professions in projected total job openings for the Upper Shore workforce region.

All of our current five-county support high school systems offer the CASE agriculture curriculum which will feed seamlessly into our program. Graduates from these high school programs will receive three credits of articulated credit for the Introduction to Agriculture course once they complete the Soil Science class at the college with a grade of C or better. Currently each high school system has about 20 – 35 students in the CASE program for a total of approximately 150 high school graduates in our service region per year.

D. Reasonableness of program duplication:

The Maryland Higher Education Commission[5] lists only one Agriculture program among community colleges in the state: Chesapeake's Associate of Applied Science in Agriculture. That A.A.S. program is explicitly practical in its design: it emphasizes practical learning in the field and laboratory, and includes courses in animal science, crop production, horticulture, agricultural marketing, and more, each of which has a significant practical component. It is intended to prepare graduates for immediate entry into the agricultural workplace, either on the farm on in the support industries for agriculture. The A.A.S. remains a cornerstone of our strategy to serve the rural, agricultural counties of the Eastern Shore.

The proposed transfer pathway in Agriculture will run as a complement to the A.A.S. Transfer is intended to serve those students who wish to pursue a bachelor's degree in agriculture; it is more classroom-oriented, and like our other transfer programs, emphasizes general education competencies in communication, problem-solving, critical thinking, technological competency, scientific literacy and reasoning, quantitative reasoning, diversity, and ethics. Graduates of this program should be well-qualified to enter baccalaureate study at the third year, and to perform well at 4-year colleges and universities.

No other two-year college in Maryland offers a transfer pathway specifically designed for agriculture students. As with our A.A.S. program, the proposed program is the first of its kind.

1. Provide justification for the proposed program.

The development and subsequent launch of our A.A.S. degree program in Agriculture, in Fall 2016, brought 10 students to Chesapeake College to study in the discipline – a robust start to a new program by our standards. However, individual advising conversations with those students, conducted by faculty in the program, indicated that a large proportion of agriculture students – in fact, the majority of them – desired to transfer to four-year institutions and pursue bachelor's degrees in the subject. The A.A.S. program is not designed for transfer students; it includes fewer general-education requirements than

[5] http://www.mhec.state.md.us/institutions_training/Pages/searchmajor.aspx

transfer students need, and it does not adequately prepare graduates for baccalaureate study.

In response, and with the hope of increasing both enrollment and diversity within the program, agriculture faculty designed the proposed Transfer Pathway in Agriculture. It shares common courses in agricultural topics, notably at the introductory level, but emphasizes the general education competencies that best prepare students for transfer and university study. It was designed to specifically prepare students for transfer to regional baccalaureate programs in Agriculture through thoughtful selection of program requirements and electives to ensure maximum transferability of credits.

E. Relevance to high-demand programs at Historically Black Institutions (HBIs)

The Transfer Pathway in Agriculture should only support Agriculture programs at nearby HBI's and should not negatively impact the implementation or maintenance of Agriculture at UMES, if it is considered a high-demand program.

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

The University of Maryland, Eastern Shore is the nearest historically black institution to Chesapeake College. Throughout the development of this Transfer Pathway in Agriculture, we have maintained open lines of communication. UMES is interested in developing articulation agreements between the Transfer Pathway in Agriculture and multiple programs under the General Agriculture Program at UMES, including Agricultural Studies, Plant and Soil Science, and Animal and Poultry Science.

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

The Transfer Pathway in Agriculture was developed in accordance to Chesapeake College's Curriculum Guide[6] and included a market analysis, review by the College's Academic Planning Council [7]

This program follows the standard General Education requirements for all A.A. degrees at the college, thus it demands 31 credits of General Education.

General Education Coursework as outlined in COMAR 13B.06.01.03C is as follows:

(1) One course in each of two disciplines of arts and humanities;
(2) One course in each of two disciplines in social behavioral science;
(3) Two science courses, at least one of which shall be a laboratory course;
(4) One course in mathematics at or above the level of college algebra; and

[6] Chesapeake College. *Chesapeake College Curriculum Development Guide*. 2016.

[7] Chesapeake College's Academic Planning Council is responsible for developing and maintaining quality academic programs by providing institutional oversight of the curricula. They ensure that curriculum meet State guidelines, reflect the vision and mission of Chesapeake College, and are developed and implemented in a manner that meets the needs of the institution's service region and student body.

(5) One course in English composition.

Fall Semester I			
FSC	101	Freshman Seminar	1
ENG	101	Composition	3
COM	101	Fund. of Oral and Organizational Communication	3
CHM	121	General Chemistry I (Biology/Natural Science G.Ed.)	4
MAT	115	Precalculus (Mathematics G.Ed.)	5
Spring Semester I			
ENG	102	Introduction to Literature	3
CHM	122	General Chemistry II	4
ECN	172	Principles of Macroeconomics (Social Science G.Ed.)	3
SOC	xxx	Social/Behavior Gen. Ed.	3
PROG	xxx	Spring Suggested Program Electives*	3
Fall Semester II			
PED	103	Wellness for Life (G.Ed.)	3
LARC	160	Introduction to Landscape Architecture (Arts & Hum. G.Ed.)	3
BIO	111	Principles of Biology I (Biology/Natural Science G.Ed.)	4
LIT	xxx	Literature Requirement	3
PROG	xxx	Fall Suggested Program Elective*	3
Spring Semester II			
IDC	201	Nature of Knowledge (Interdisciplinary G.Ed.)	3
BIO	113	Principles of Biology II	4
SCI	272	Internship in Natural Science	2
SOC	xxx	Social Science Elective	3
ART	xxx	Fine Arts Gen. Ed.	3
Minimum Required Credits			**60**

List any courses meeting discipline or program electives:

Fall Program Electives		Spring Program Electives	
AGR 220 – Introduction to Animal Sciences	4	BUS 101 – Introduction to Business	3
AGR 225 – Organic Crop Production	4	AGR 113 – Soil science	4
AGR 230 – Vegetable and Crop Production	4	AGR 120 – Introduction to Food Systems	3
PHY 205 – College Physics I	4	MAT 204 – Introduction to Statistics	3
MAT 204 – Introduction to Statistics	3	AGR 213 - Introduction to Agricultural Economics	3

*Suggested program electives can be taken in either or both semesters but should be selected from the options above

Course Descriptions

FSC 101: Freshman Seminar
A course engaging students in key skill areas designed to increase success in college. This course asks students to: practice effective written and oral communication, both individually and in a collaborative presentation; examine and discuss strategies related to academic success; explore opportunities and services available at Chesapeake College; develop a basic understanding of policies affecting students; and to demonstrate and utilize basic technological competencies. FSC 101 must be taken within the first 12 load hours if required in the program of study.

[FALL/SPRING] One-hour lecture per week. 1 credit

ENG 101 - Composition [G.Ed.]
Instruction in the writing process using published essays as models of effective writing. Students will
learn to write clearly organized essays using the basic patterns of expression. The English language, logic, library use, and the form and organization of research papers are studied. A research paper must be completed to satisfy course requirements. Three hours lecture per week. [F/S] PREREQUISITE: Appropriate score on placement test. 3 credits

COM 101 - Fundamentals of Oral and Organizational Communication [G.Ed.]
Foundations of communication theory and practice relevant to individual, small group, and business and professional settings. Major units include theories of communication, interpersonal communication, group discussion (teamwork), organizational culture, diversity, listening, conflict management, interviewing, public speaking and visual aids. Three hours lecture per week. [FALL/SPRING]. 3 credits

CHM 121 – General Chemistry I [G.Ed.]
An introduction to the fundamental principles of chemistry including atomic structure, chemical reactions and stoichiometry. The laboratory consists of basic techniques and study of chemical reactions. [FALL] Three hours lecture, three hours laboratory per week. Prerequisite(s): Complete ENG 094+ as a prerequisite, or appropriate placement score.
Prereq/Corequisite: MAT 113+ or MAT 115+. 4 credits.

MAT 115 – Precalculus [G.Ed.]
A precalculus algebra and trigonometry course to prepare students majoring in mathematics, engineering, or physical science for courses in calculus and higher-level mathematics. Topics included are polynomial, rational, exponential, logarithmic, trigonometric, and inverse trigonometric functions and their graphs; trigonometric identities and trigonometric equations; appropriate applications of trigonometry; and analytic geometry. [FALL/SPRING] Five hours per week. Prerequisite(s): Complete MAT 032+ as a prerequisite, or appropriate placement score. 5 credits

ENG 102 – Introduction to Literature
An introduction to fiction, drama, and poetry, with emphasis on the writing of critical essays. A research paper is required. [FALL/SPRING] Three hours per week. Prerequisite(s): ENG 101+. 3 credits

CHM 122 – General Chemistry II
A continuation of CHM 121+ with major emphasis on chemical kinetics, chemical equilibrium, acid-base and solubility equilibria, redox reactions, electrochemistry, qualitative analysis and the use of computers in chemical studies. The laboratory includes both qualitative and quantitative work. [SPRING] Three hours lecture, three hours laboratory per week. Prerequisite(s): You must complete CHM 121+ with a grade of C or higher prior to taking this class. 4 credits.

ECN 172 – Principles of Microeconomics
A continued study of the principles of economic behavior and their application to economic problems. The emphasis is on microeconomic principles. [FALL/SPRING] Three hours lecture per week.
Prerequisite(s): Complete ENG 094+ as a prerequisite, or appropriate placement score. RECOMMENDED ECN 171. Prereq/Corequisite: Take MAT 023 as a pre or corequisite, or appropriate placement score. 3 credits

PED 103 – Wellness for Life [G.Ed.]
The introduction of basic concepts and behavioral choices to become fit and promote wellness for life. All aspects of the total person will be covered, with emphasis on achievement of full potential in the physical, mental, emotional, social, environmental, and spiritual aspects of wellness for life. Assessment activities and program design will be emphasized. [FALL/SPRING] Three hours lecture per week. 3 credits

LARC 160 – Introduction to Landscape Architecture [G.Ed.]
Landscape architecture addresses issues that range from the planning and the design of entire cities to the specific details pertaining to small gardens. The class examines the challenges that arise and the opportunities that are presented when human beings design on the land. It studies the wide-ranging efforts in the field of landscape architecture, which is the art and the

science of designing, planning and managing the land. [FALL] Three hours lecture per week. Prerequisite(s): Complete ENG 094+ as a prerequisite, or appropriate placement score. Prereq/Corequisite: Take MAT 023 as a pre or corequisite, or appropriate placement score. 3 credits

BIO 111 – Principles of Biology I
Basic principles of biology with special emphasis on cellular and molecular biology. This course for biology majors is one of two courses for students who plan to transfer to programs requiring this course as a foundation for further coursework. Content focuses on providing a framework for understanding how biological components and pathways interact and function by applying principles, techniques, and methods of data analysis to biological problems. The laboratory compliments theory by utilizing the scientific method in experiments to enhance expertise in the use of laboratory equipment. [FALL/SPRING-AS NEEDED] Three hours lecture, two hours laboratory per week. Prerequisite(s): Complete ENG 094+ as a prerequisite, or appropriate placement score. Prereq/Corequisite: MAT 113+ or MAT 115+ or MAT 140+ or receive permission from the Science Department. 4 credits

IDC 201 – Nature of Knowledge [G.Ed.]
The way knowledge is acquired in different disciplines, cultures, and times. The course compares the acquisition of knowledge in the social sciences, the humanities, and the natural sciences. Emphasis is on understanding, analyzing, discussing, and evaluating methods of learning used by prominent writers in various disciplines and on applying such methods to one's own experience. [FALL/SPRING] Three hours per week. Prereq/Corequisite: Completion of at least one of the eligible courses from each category of the General Education Limited Distribution Core and ENG 102+. 3 credits

BIO 113 – Principles of Biology II
Basic principles of biology with special emphasis on organismal, ecological, and evolutionary biology. This course for biology majors is one of two courses for students who plan to transfer to programs requiring this course as a foundation for further coursework. Content focuses on organismal biology, evolutionary diversity of living organisms, behavior and ecological interactions that occur among species. The laboratory complements theory by utilizing the scientific method in experiments to enhance expertise in the use of laboratory equipment. [SPRING] Three hours lecture, two hours laboratory per week. Prerequisite(s): Complete ENG 094+ as a prerequisite, or appropriate placement score. Prereq/Corequisite: MAT 113+ or MAT 115+ or MAT 140+ or receive permission from the Science Department. 4 credits

SCI 272 – Internship in Natural Science
Offers students course credit for internship or cooperative learning experiences in the scientific workplace. By working with employers on a selected project that meets academic goals, students will develop practical workplace skills to complement their academic knowledge. At the same time, students will report regularly to an academic faculty member who will supervise the student's progress, act as a liaison to the supervisor in the workplace, and evaluate the project to ensure that it meets academic goals. Students will present a final project to the supervising faculty member; the course grade will be assigned based upon that project and a written evaluation from the workplace supervisor. [AS NEEDED] Ten hours lecture over the course of the semester and six hours of work experience per week
Prerequisite(s): A 2.0 GPA; completion of 12 credit hours; passing grade in one four-credit laboratory science course. 2 credits

Suggested Program Electives Course Descriptions:

AGR 113 – Soil Science
Covers the formation, identification, and properties of soils. Additional topics covered include nutrient cycling, organic matter, nutrient management, soil microorganisms, and discussions of different agricultural production systems in the US. [SPRING] Two hours lecture; four hours of laboratory per week.
Prerequisite(s): CHM 121+. 4 credits

AGR 120 – Introduction to the Food System
An interdisciplinary introduction to the food system: food science and policy, food marketing and economics, food processing, agriculture, biotechnology, nutrition, eating habits and choices, food security, the connections between consumer demand and food production, and the ethical ramifications of the current food system. The course will focus on the American food system, but will touch on global food issues,

including how to feed an estimated 9,700,000,000 people by 2050. [SPRING] Three hours lecture each week. 3 credits

AGR 220 – Introduction to Animal Science
A comprehensive overview of the application of biology in the care and use of animals that live in close association with humans, including food animals, companion animals, and zoo animals. The role of science in modern food production using animals will be emphasized. [FALL] Three hours lecture and two hours laboratory each week. Frequent field experiences required. 4 credits

AGR 213 – Introduction to Agricultural Economics
This introduction to economic concepts related to agriculture includes definition and scope of agricultural economics; business organizations in the food and fiber system; factors of production and their characteristics; location of agricultural production; market equilibrium analysis, and the role of price elasticities of demand and supply. [FALL] Three hours lecture. Prerequisite(s): Complete MAT 023 as a prerequisite, or appropriate placement score. Prereq/Corequisite: Take ENG 094+ as a pre or corequisite, or appropriate placement score. 3 credits

AGR 225 – Organic Crop Production
Organic farming and gardening methods will be discussed in class and practiced in the field. The philosophical background of organic farming as well as the biological, environmental and social factors involved in organic food production are also covered. [SPRING] Two hours lecture and four hours of laboratory experience per week. Prerequisite(s): AGR 113+. 4 credits

AGR 230 – Vegetable and Crop Production
An introduction to vegetable and crop production systems. The course will cover the basics of site selection and establishment, fertilization, irrigation, and harvest of vegetables and other agricultural crops. Major vegetable crops as well as traditional agricultural crops typically grown for human and animal consumption. [SPRING] Two hours lecture and four hours laboratory per week. Prerequisite(s): AGR 113+. 4 credits

BUS 101 – Introduction to Business
The role and function of business enterprise within our economic framework. Topics included are organization, finance, marketing, personnel management and production. [FALL/SPRING] Three hours lecture per week. Prerequisite(s): Complete ENG 094+ as a prerequisite, or appropriate placement score. 3 credits

MAT 204 – Introduction to Statistics
An introduction to probability and statistics. Topics included are sampling methods; organization of data; measures of: central tendency, dispersion, and position; probability; probability distributions; confidence intervals; and hypothesis tests. [FALL/SPRING] Three hours per week. Prerequisite(s): Complete MAT 031+ as a prerequisite, or appropriate placement score. 3 credits

PHY 205 – College Physics I
Algebra-based study of the laws of physics. This course provides the first of two semesters of college physics. Topics include vectors, motion, force, equilibrium, momentum and energy, properties of matter, mechanical waves and sound, and an introduction to kinetic theory and thermodynamics. [FALL] Three hours lecture, three hours laboratory per week. Prerequisite(s): Complete ENG 094+ as a prerequisite, or appropriate placement score; MAT 115+. 4 credits

Educational objectives and intended student learning outcomes.

The program goals are to:

- Facilitate proficiency in content knowledge and skills for the College's general education competencies.

- Provide students with a broad education in the disciplines that form the foundation of human knowledge.
- Prepare students for transfer to a four-year institution.
- Promote technical competency, professional knowledge and ethical responsibility.

H. Adequacy of articulation

The Transfer Pathway in Agriculture was designed to transfer seamlessly to regional baccalaureate programs in Agricultural Sciences. When selecting courses to serve as program requirements beyond General Education courses, care was taken to ensure transfer students would complete necessary prerequisite courses to remove barriers to enrollment in courses typically completed in year three of these programs. Similarly, when selecting program elective courses, care was taken to select Agriculture courses that were common to regional baccalaureate programs as well as courses designed with enough rigor to transfer. Additional program electives beyond agriculture courses were included in the Transfer Pathway, namely Physics and Statistics, as there were a number of baccalaureate programs requiring these courses that warranted inclusion in this pathway.

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

Nicole Barth is the only full-time faculty member within the existing Agriculture program. She holds a Master's Degree in Marine, Estuarine, and Environmental Science and is currently the Program Coordinator and Instructor of Agriculture at Chesapeake College. She teaches numerous courses and coordinates the administrative duties within the program. Professor Barth is also qualified to several of the General Education courses affiliated with the elective portion of the program and the science division including AGR 101 (Introduction to Agriculture); SCI 142 (Earth Science); and SCI 151 (Environmental Science). We have adjunct faculty members who teach individual courses within the Agriculture program relevant to this concentration. Due to the specialization of this degree pathway, Chesapeake College can leverage existing faculty members to include all of the general education instructors.

Faculty member	Terminal degree	Full-time or part-time	Course(s) taught
Nicole Barth	MS; 5+ years teaching experience at Chesapeake College and local farmer with hands-on experience	Full-time	AGR 113/AGR 120/AGR 220/AGR 225/AGR 230
John Hall	MS; retired University of Maryland Extension agent, over 20 years of experience with agricultural marketing and economics	Part-time	AGR 213

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

The library of Chesapeake College provides students, faculty and community members with various resources to meet their informational and research needs and supports the programs that make up the current curriculum offerings. The library has a collection of 30,000 print titles, more than 300,000 e-books, 1,500 audiovisual materials, 50 print serial subscriptions, and over 100,000 electronic print serials. The library subscribes to over 50 databases providing full-text material, bibliographic citations, images, audio, and films, dedicated to the scholarly disciplines in the sciences, social sciences, education, law, and medicine. Additionally, local information regarding our service region is available in print via holdings in the library's Chesapeake Room, which is dedicated to the region's history and cultural identity which is certainly grounded in agriculture.

The library is a member of the Upper Eastern Shore Library Consortium which provides for resource sharing among the college and local public libraries. This program allows our patrons to borrow from public and academic libraries throughout the State of Maryland. Information about the college's library resources is found at http://info.chesapeake.edu/lrc/library. The President has affirmed that the program can be implemented within existing library resources.

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

Students have the opportunity to utilize all the College's resources including the library, tutoring center, computer labs, small group conference areas, and student dining/lounge area. Existing classrooms and labs within the Science and Humanities Buildings will be used to hold all classes and there is sufficient space to hold any needed new equipment, supplies or materials. Our rural campus hosts multiple practical learning resources for agriculture students, including a high tunnel (small greenhouse) and 55 acres of agricultural land, as well as cutting-edge storm water remediation appropriate to our land use patterns, and renewable energy installations. At the same time, we recognize the global reach of agriculture, and the global market into which regionally grown products must enter. Additionally, grants are being sought to help fund any other needs the program may have in regard to equipment. However, all needs are being planned for and incorporated into the annual college budget projections and planning process. This new concentration proposal was carefully reviewed and approved through the college governance structure. Thus it has met with the approval of the college faculty, administration and Board of Trustees for implementation and inclusion in the college budgeting process. The President has affirmed that the program can be implemented within existing institutional resources.

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

TABLE 1: PROGRAM RESOURCES AND NARRATIVE RATIONALE

1. **Reallocated Funds**
   This program will utilize existing faculty resources and administrative staff.

2. **Tuition and Fee Revenue**
   We are projecting no more than a 2% tuition increase each year.

3. **Grants and Contracts**
   While additional grant funding will be sought to cover additional equipment costs, this program will be supported through the College's general fund.

4. **Other Sources**
   Other sources of revenue include Consolidated Fees, $35 per credit hour, this fee helps cover the cost of the academic support center, student activities, technology and the general expenses of the college; Capitol Improvement fees, $15 per registration transaction, this fee supplements county funds for facility improvements and equipment upgrades for projects that do not meet the threshold for State funding; and Registration fees, $10 per registration transaction, this fee defrays cost of clerical support and supplies for registration processing.

5. **Total Year**
   Program Resources and Narrative Rationale table on following page

Maryland Higher Education Commission

TABLE 1: RESOURCES

Resource Categories	Year 1	Year 2	Year 3	Year 4	Year 5
1. Reallocated Funds	$0	$0	$0	$0	$0
2. Tuition/Fee Revenue (c + g below)	$19,764	$31,055	$40,968	$51,426	$64,170
a. Number of F/T Students[8]	3	5	6	7	9
b. Annual Tuition/Fee Rate	$3,172	$3,235	$3,300	$3,366	$3,434
c. Total F/T Revenue (a x b)	$9,516	$16,175	$19800	$23562	$30906
d. Number of P/T Students[9]	7	10	14	18	21
e. Credit Hour Rate	$122	$124	$126	$129	$132
f. Annualized Credit Hour Rate	$1,464	$1,488	$1,512	$1,548	$1,584

[8] In Fall 2018, Chesapeake College students with full-time status took an average of 13 credits/semester.
[9] In Fall 2018, Chesapeake College students with part-time status took an average of 6 credits/semester.

g. Total P/T Revenue (d x e x f)	$10,248	$14,880	$21,168	$27,864	$33,264
3. Grants, Contracts & Other External Sources	$0	$0	$0	$0	$0
4. Other Sources	$6,170	$8,090	$12,340	$15,180	$18,510
TOTAL (Add 1 – 4)	$25,934	$39,145	$53,308	$66,606	$82,680

In Fall 2018, 30% of Chesapeake College's students are full-time and 70% are part-time. On average, full-time students take 13 credits and part-time students take 6 credits per semester. Our projected enrollment has been forecasted based on these ratios. Year one enrollment is based on the initial group of 10 students, followed by growth of 5 students per year.

We are projecting a tuition increase of no more than 2% per year. Other sources of revenue include Consolidated Fees[10] of $35/credit hour; Registration Fees[11] of $10 per registration transaction; and Capital Improvement Fees [12] of $15 per registration transaction.

TABLE 2: PROGRAM EXPENDITURES:

Expenditure Categories	Year 1	Year 2	Year 3	Year 4	Year 5
1. Faculty (b + c below)	$24,456	$24,865	$25,281	$25,705	$26,136
a. Number of FTE	.30	.30	.30	.30	.30
b. Total Salary[13]	$20,226	$20,529	$20,837	$21,150	$21,467
c. Total Benefits	$4,230	$4,336	$4,444	$4,555	$4,669
2. Admin. Staff (b + c below)	$0	$0	$0	$0	$0
a. Number of FTE	$0	$0	$0	$0	$0
b. Total Salary	$0	$0	$0	$0	$0
c. Total Benefits	$0	$0	$0	$0	$0

[10] Other Sources: Consolidated Fee: The consolidated fee helps cover the cost of the academic support center, student activities, technology and the general expenses of the college. This fee also covers use of the physical education facilities and equipment.

[11] Other Sources: Registration Fee: Defrays cost of clerical support and supplies for registration processing

[12] Other Sources: Capital Improvement Fee: Supplements county funds for facility improvements and equipment upgrades. These projects do not meet the threshold for State funding.

[13] 30% of the FT faculty member's time devoted to teaching coursework specific to the program and 100% of the adjunct faculty members' time (teaching one course)

3. Support Staff (b + c below)	$0	$0	$0	$0	$0
a. Number of FTE	$0	$0	$0	$0	$0
b. Total Salary	$0	$0	$0	$0	$0
c. Total Benefits	$0	$0	$0	$0	$0
4. Technical Support and Equipment	$5,000	$5,000	$5,000	$5,000	$5,000
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)	$29,456	$29,865	$30,281	$30,705	$31,136

The program will be implemented with existing administrative staff and campus resources. Campus resources are funded through the College's general operating budget each year. The dedicated faculty member, Nicole Barth, is currently utilizing 30% of her time teaching dedicated Agriculture courses and 70% teaching related General Education courses. This ratio allows for a shift in teaching responsibilities as the program grows. Technical support and equipment reflects the cost of lab equipment to include soil samplers, animal models, drones and other essential supplies.

Salaries are forecasted to increase 1.5% each year, while health benefits are forecasted to increase 2.5% each year.

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

The college uses a five-year internal program review process for all of its courses and its programs. Additionally, all courses are reviewed annually with student opinion surveys. All courses and programs will implement faculty developed and approved assessment plans to monitor student mastery of all identified course and program goals and student learning outcomes. Each program also makes use of a program advisory board with membership consisting of college faculty, administration, area business representatives, and local leaders from the agriculture industry. This board will review and recommend curriculum revisions as needed.

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).

Chesapeake College will use its ongoing outreach strategies to feeder high schools and to communities with high concentrations of minority populations. The College has a strong dual enrollment program which will be used to encourage early decisions about career goals and career exploration. Also the college, working in cooperation with the local county schools, has initiatives such as grow your own programs, community mentors, and new financial incentives, to recruit and retain more minority students. The college has an aggressive "early alert" system as part of its student retention initiatives.

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

This program is not related to low productivity programs identified by the Commission.

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

Chesapeake College follows C-RAC guidelines for distance education.

Addendum

Fall Semester I

FSC	101	Freshman Seminar	1
ENG	101	Composition	3
COM	101	Fund. of Oral and Organizational Communication	3
CHM	121	General Chemistry I (Biology/Natural Science G.Ed.)	4
MAT	115	Precalculus (Mathematics G.Ed.)	5

Spring Semester I

ENG	102	Introduction to Literature	3
CHM	122	General Chemistry II	4
ECN	172	Principles of Macroeconomics (Social Science G.Ed.) **OR**	3
SOC	xxx	Social/Behavior Gen. Ed.	3
PROG	xxx	Spring Suggested Program Electives*	3

Fall Semester II

PED	103	Wellness for Life (G.Ed.)	3
LARC	160	Introduction to Landscape Architecture (Arts & Hum. G.Ed.)	3
BIO	111	Principles of Biology I (Biology/Natural Science G.Ed.)	4
LIT	xxx	Literature Requirement	3
PROG	xxx	Fall Suggested Program Elective*	3

Spring Semester II

IDC	201	Nature of Knowledge (Interdisciplinary G.Ed.)	3
BIO	113	Principles of Biology II	4
SCI	272	Internship in Natural Science	2
SOC	xxx	Social Science Elective	3
ART	xxx	Fine Arts Gen. Ed.	3

Minimum Required Credits: 60

John Hall holds a M.S. in Dairy Science and a B.S. in Agricultural Engineering and Science from the University of Illinois – Urbana-Champaign.

The Board approved the program on 12/3/2015 as verified by Kate Maxwell, Executive Associate to the President and Assistant Secretary to the Board of Trustees.