University of Maryland Eastern Shore Combined Research and Extension Plan of Work
2021-2025

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I. Plan Overview

1. Executive Summary

The University of Maryland Eastern Shore (UMES), the 1890 Land-Grant University in Maryland, has previously submitted a joint Plan of Work (POW) with the University of Maryland College Park (UMD). This is the first separate POW for UMES. Both universities are committed to continue the excellent collaborative relationship in research and extension. The integrated research and extension programs will be implemented under the auspices of the UMES Agricultural Experiment Station (AES) and UMES Extension Program. Both programs are integrated (or housed) in the School of Agricultural and Natural Sciences (SANS).

The UMES Strategic Plan states that, “In keeping with its land grant mandate, the University has a purpose and uniqueness grounded in distinctive learning, discovery, and engagement opportunities in agriculture”. The UMES Strategic Plan speaks pointedly to the commitment to advance productivity in research, knowledge transfer, social and economic development, and contribution to an enhanced quality of life in Maryland. Within this remit, our land grant programs are focused on four strategic areas: 1) Agriculture and food, with a focus on food security, 2) Natural resources and environmental sustainability, 3) Human health and development, and 4) Products to market.

Furthermore, UMES strives to educate and train the next generation of teachers, educators, and scientists in the food, agricultural and related sciences. While UMES’ research and extension programs address the needs of all Marylanders, the university places a special emphasis on serving diverse and historically underserved populations. The UMES Extension Program will persist in its mission of educating, supporting and engaging Marylanders by providing factual and useful information through the guidance and knowledge of an interacting team of educators, specialists and program leaders who are linked to local, national and international investigators focusing on measurable solutions to stakeholders challenging situations.

A brief summary on the research and extension emphasis under each of the four strategic areas of focus is given below:

Agriculture and food with a food security focus: Agriculture plays a critical role in Maryland’s economy and will continue to do so for the foreseeable future. UMES research and extension work in this area has a specific focus on food safety and security and this is undertaken under the following themes: food safety and quality; agribusiness and economic development; alternative, small scale, family farms and urban agriculture; specialty crops, honey bees, poultry, small ruminants and large scale agriculture.

Natural resources and environmental sustainability: Maryland’s natural resources underpin a range of economic activities such as forestry based industries, tourism, fisheries, etc., and provide the basis for supporting quality living for citizens. Therefore, the establishment of a strong and sustainable foundation to guide the use and protection of these resources is a priority. To this end, UMES research and education activities will focus on several key areas including water resources and watershed management, with a focus on both the Chesapeake Bay and the Maryland coastal bays.

The health, social and economic wellbeing, and resilience of Maryland’s communities are important issues for Maryland. The youth are our future as a nation and support for the robust development of young people is essential. With this said, UMES youth development efforts will focus on 4-H programming with a special emphasis on Science Technology, Engineering, Agriculture and Mathematics (STEAM). At the same time, the nation is facing a growing health challenge with a large proportion of the population being obese with a body mass index (BMI) of 30 or higher. Therefore, UMES’ extension programs will also have a focus on developing resilient communities and families in Maryland through education efforts in nutrition and health especially for diverse families with limited resources. The goal of these efforts will be to empower the communities and families with knowledge and skills in nutrition, meal planning, and food buying to insure

adequate nutrition.

To fulfill Maryland's research and extension goals, UMES and UMD have identified seven important critical issues. These issues are directly linked to the key strategic areas identified by ESCOP and they also link directly to USDA-NIFA priorities. These issues will be the focus of UMES' 2021-2025 Plan of Work and will be used to direct resources to accomplish goals. The seven issues are as follows:

- Food and agriculture: Sustainability, competitiveness, and profitability of food and agriculture.
- Climate change: Adapting to and mitigating the impacts of climate change.
- Renewable energy: Energy security and the development of the bioeconomy from renewable natural resources.
- Safe, secure and abundant food supply: Ensuring a safe, secure and abundant food supply technological innovation, and leadership to ensure a safe, secure, and abundant food supply.
- Human health, nutrition and wellness: Improving human health, nutrition and wellness.
- Environmental stewardship: Environmental stewardship and sustainable practices.
- Family and community resiliency: Strengthening individual, family and community resilience.

2. FTE Estimates

Year	1890 Extension	1890 Research
2021	26.0	29.0
2022	28.0	29.0
2023	29.0	29.0
2024	29.0	29.0
2025	29.0	29.0

II. Merit / Peer Review Process

Extension Faculty Reviews:

The merit review process for UMES Extension Program faculty and staff, occurs annually when each faculty/staff member is formally evaluated by the Program Leader (or designated supervisor), or Associate Administrator for Extension as appropriate. Each faculty/staff member is evaluated based on individual merit. Documents used for the merit review are approved Individual Extension Plan (IEP), Curriculum Vitae, Activity Insight reports, annual impact statements, Performance Review and Development Process (PRD) and Teaching Effectiveness Summary. Extension Specialists housed in academic departments are also reviewed by their respective Department Chairs.

Research Faculty Reviews:

All research faculty have a departmental home, and while there are subtle differences between the departments, they all have a system for annual review and assignment of a merit ranking by the respective chair. The criteria, from a research perspective are evaluated, in general, on grantsmanship, publications, the quality of the journal (based on a citation index), research graduate student training, and invited and/or contributed scientific talks and seminars. These are also the

same criteria that are used to evaluate promotion and tenure decisions. This process is followed for tenured, tenure-track, and research faculty appointments.

Programmatic Reviews:

Programmatic reviews are conducted at the departmental level at the request of the dean, associate dean, and/or department chairs. They generally range in the five to ten-year cycle. These reviews are conducted by in-house and external reviewers from prestigious departments, institutions, or federal agencies that have similar departmental or agency diversity in programmatic issues.

Project Reviews:

All research projects funded through AES undergo an internal peer review process by the associate research director, the research director and up to two subject matter specialists as appropriate. A similar process will be implemented for McIntire-Stennis funded projects as well.

III. Stakeholder Input

1. Actions to Seek

Since 1999 (1998 Farm Bill), Congress mandated the establishing and implementation of a process to obtain input from users of the Extension Program services, as well as input for research and academic programs. A priority for the UMES Extension Program is to design and implement a comprehensive stakeholder input process which will be inclusive, fair, balanced, and accountable. At UMES, a significant source of stakeholder input happens during the annual Small Farm conference because stakeholders are actively engaged in assessing needs and identifying issues of importance to Maryland residents. Input from stakeholders improves existing Extension programming, directs new programming efforts, and provides rationale for the outreach component on grant applications. To inform this Plan of Work, the following strategies were used: 1) statewide strategic planning stakeholder data were reviewed; 2) analysis of secondary data for Maryland, including data from the U.S. Census, USDA National Agricultural Statistics, Maryland Departments of Planning, Agriculture, Natural Resources, Economic Development, and Maryland Department of Health and Mental Hygiene; 3) environmental scanning at the national, regional, state, and local levels; and, 4) the strategic planning processes of UMES and SANS. Also, AES research faculty seek input from other researchers through state, regional, national, and international conferences and workshops in which they participate. Based on findings, changes are made to program offerings in order to keep educational programs relevant and fresh always complementing the needs and social changes.

2. Methods to Identify

Input from Maryland's residents will be solicited through local and diverse advisory councils which will be made up stakeholder representatives. During the next five years, increased emphasis will be placed on supporting these councils and ensuring that communication happens in consistent, two-way patterns using multiple methods including: face-to-face meetings, social networking, and email messaging. Instruments for soliciting feedback will be translated to stakeholders' preferred languages if necessary, to capture their feedback. These advisory councils will work with administrators at UMES to identify emerging issues and strategies to address them. Concurrently, SANS is establishing an advisory council that will provide guidance to the AES programs. SANS administrative officers sit on and attend a wide array of committees with the State's agricultural leaders. Such continuous contact with the state's agricultural leadership including the Maryland Secretaries of Agriculture, Natural Resources, and Environment will provide additional feedback to ensure research and extension issues examined by UMES personnel tie in to state priorities. Additionally, feedback will be sought from public and private sector groups focused on agricultural issues including the: Maryland Agricultural Commission, Maryland Grain Producers Association, Maryland Farm Bureau, Delmarva Poultry Industry, Southern Maryland Agriculture Commission, Maryland Association of Soil Conservation Districts and many other similar groups. Finally, research and extension faculty will engage and discuss priority topics with other scientists and specialists through various platforms including electronic media, symposia, professional meetings and workshops.

3. Methods to Collect

An environmental scan will be used to gather input from diverse external clientele and partner organizations to identify the major issues facing Maryland communities. Additionally, focus groups will be designed and implemented to achieve the same purpose. The intent of these focus groups will be to listen and gather information to better understand how people think and feel about issues, products or services. The focus group technique gathers opinions in a non-threatening, respectful environment that encourages the sharing of participants' perceptions and points of view. There is no pressure to reach consensus or vote, no clues on the answers expected, and no judgments. Careful, systematic analysis of focus group input will provide clues and insights on the needs of clientele. The value of everyone on the initiative team using the same process and questions is the identification of trends and patterns that are common across the state. This consistency will be critical to the success of the entire process. Extension educators and/or specialists will function as the focus group moderators and assistant moderators gathering information for further analysis.

4. How Considered

Stakeholders input will be utilized in a variety of ways to include:

1. The budget process, particularly at the local level;

2. Identification of emerging issues through understanding the most critical needs that can be addressed by research and extension programs;

3. Re-directing extension and research programs by understanding critical needs and defining new priorities;

4. In staff hiring to recruit and employ the best professionals available to effect change in an ever-changing society; and

5. In-action programs as extension educators work in communities, schools, etc., to produce positive change and to set priorities for impacting the future.

IV. Critical Issues

1 Food and Agriculture

Description:

ESCOP Grand Challenge 1: Sustainability, Competitiveness, & Profitability of Food & Agriculture

In order to underpin Maryland's strong agricultural background UMES' research and education efforts will focus on two areas of growing strategic importance: 1) Alternative, small scale and urban agriculture, and 2) Conventional agricultural systems with a specific focus on specialty crops, poultry and small ruminants. Recent years have seen considerable interest in the development of alternative, small scale and urban agriculture. The scale and scope of these endeavors varies from complex production approaches including rooftop gardens and aquaponic systems to growing crops on abandoned properties. The UMES Extension's Small Farm Program will provide programs focused on empowering small-scale, limited resource, and underserved farmers with the knowledge and skills needed to own and operate a farm business successfully. This will include on-farm demonstrations, training, workshops and field tours and a specialized annual small farm conference. Several crop and animal agricultural production issues are important priority areas for Maryland and the region. To address these issues, UMES will focus its research and education on several key areas: 1) Row crops especially from a

context of smart agriculture including precision application of nutrients and water, 2) Specialty crop development including development of ethnic crops to provide market alternatives for farmers and value added development of unique products, 3) Work to support poultry production, including research on feeds, animal housing and energy issues and meat quality, 4) food safety, and 5) Parasite and pasture management in small ruminant production.

Term: Long

Science Emphasis Areas
Education and Multicultural Alliances
Environmental Systems
Food Safety
Sustainable Agricultural Production Systems

2 Climate Change
Description:

ESCOP Grand Challenge 2: Adapting to & Mitigating the Impacts of Climate Change

The potential consequences of climate change are broad ranging and ubiquitous. Thus, climate change work is cutting across several priority areas including food security, natural resources and environmental sustainability. Specific efforts to understand the potential impacts of climate change is critical in understanding how to develop strategies for mitigation. Development of mechanisms for enhanced and resilient food systems is critical. Efforts at UMES will be focused on crop adaptability and better understanding of maximizing ecosystem services in areas such as pest management. Education will be a critical component in ensuring stakeholders have a good understanding of the issues and such elements will be interwoven into extension programming.

Term: Long

Science Emphasis Areas
Agroclimate Science
Education and Multicultural Alliances
Environmental Systems
Food Safety
Sustainable Agricultural Production Systems

3 Renewable Energy Resources
Description:

ESCOP Grand Challenge 3: Energy security and the development of the bioeconomy from renewable natural resources.

The development of a secure, and sustainable renewable energy framework that will support the rapidly expanding human population is a critical goal for Maryland and the nation. This will be an essential step in the efforts to wean consumers from an over dependence on fossil fuels and the other challenges associated with their use, such as pollution. Renewable energy sources have the potential to boost the ‘green economy’, thus contributing to job creation, regional development, and long-term economic growth. Biomass is one of the most important sources of renewable energy especially when its production does not compete with food production.

Thus the importance of bioenergy and bio-based products in the US is expected to increase over the coming decade, and fundamental and applied research on biomass sources and conversion technologies for sugars and biofuels and process technologies will pave the path to achieve a more self-reliant bio-based economy. This critical area falls directly under UMES' strategic cluster on natural resources and environmental sustainability and the specific focus on renewable and sustainable energy.

Term: Long

Science Emphasis Areas
Bioeconomy, Bioenergy, and Bioproducts
Education and Multicultural Alliances
Environmental Systems
Sustainable Agricultural Production Systems

4 Safe, Secure, Abundant Food Supply
Description:

ESCOP Grand Challenge 4: Ensuring a Safe, Secure & Abundant Food Supply technological innovation, and leadership to ensure a safe, secure, and abundant food supply.

The safety, security and sufficiency of the national and global food supply is beset by a range of challenges which are exacerbated by the expanding human population. Innovative solutions are critically needed. UMES research and education efforts in this area span to thematic areas: Agriculture and food security and products to market. Work on food safety and quality, addresses poultry production, fresh produce and seafood food industries. This work forms the primary thrust of the Center for Food Safety, Science and Technology. Agribusinesses continue to be a key pillar of Maryland's economy. UMES' work in this area has a focus on supporting and enhancing local agribusiness development and entrepreneurship while investigating emerging issues facing local, regional, and national food systems.

Term: Long

Science Emphasis Areas
Education and Multicultural Alliances
Family & Consumer Sciences
Food Safety
Human Nutrition
Sustainable Agricultural Production Systems

5 Human Health, Nutrition, & Wellness
Description:

ESCOP Grand Challenge 5: Improving Human Health, Nutrition & Wellness

Communities and families across the nation are facing a growing number of challenges. For instance, many are facing tremendous health challenges with a large proportion of the population being obese. UMES' strategic focus on human health and development includes a specific focus on the community livelihoods including the health and well-being of Marylanders. The educational efforts in the nutrition and health program have a specific

focus on diverse families with limited resources with the goal of empowering them with knowledge and skills in nutrition, meal planning, and food buying to insure adequate nutrition. Family and consumer science efforts also target the social and economic well-being of these communities. UMES is nurturing a Center for Obesity Prevention whose goal is to accelerate the progress in obesity prevention through effective and holistic programs that address key underlying determinants of obesity and enhance effective and sustainable behavioral changes.

Term: Long

Science Emphasis Areas
Education and Multicultural Alliances
Family & Consumer Sciences
Food Safety
Human Nutrition

6 Environmental Stewardship
Description:

ESCOP Grand Challenge 6: Environmental Stewardship & Sustainable Practices

Maryland's natural resources underpin a range of economic activities such as agriculture, forestry based industries, tourism, fisheries etc. and provide the basis for supporting a good quality living for Marylanders. Ensuring a strong and sustainable foundation to guide use and protection of these resources is a priority as is developing ways to ensure they support livelihoods of Marylanders. This critical issue links directly to the UMES initiative on natural resources and environment with a focus on water resources and watershed management and conservation and use of coastal marine resources especially for seafood and aquaculture. Water resources and watershed management initiatives target finding economical and practical solutions to water quality issues facing the Chesapeake Bay through the development of innovative and economical nutrient management systems and promoting the utilization of effective technologies and management strategies.

Term: Long

Science Emphasis Areas
Agroclimate Science
Education and Multicultural Alliances
Environmental Systems
Sustainable Agricultural Production Systems

7 Family & Community Resiliency
Description:

ESCOP Grand Challenge 7: Strengthening Individual, Family & Community Resilience

The youth are our future as a nation and support for robust development of young people is a critical strategic goal for UMES. Thus, UMES has implemented a vibrant youth development initiative which is underpinned by a robust range of activities and initiatives including the 4-H-STEM program. The initiative will synergize its programs and activities alongside UMD-UME to fulfill the national goals of the 4-H program. Thus efforts have targeted teaching youth about citizenship, leadership, and life skills so that they develop into competent, caring,

compassionate, and contributing citizens. The UMES initiatives will have a specific contribution to STEM, that maximize on the opportunities in the Delmarva region. This effort was initiated in 2014, when UMES assembled the first ever 4-H STEM focused team of educators for Maryland. The initiative will continue its focused efforts through in-school enrichment, after school programs, 4-H clubs, and camps.

Term: Long

Science Emphasis Areas
Education and Multicultural Alliances
Environmental Systems
Family & Consumer Sciences
Human Nutrition
Sustainable Agricultural Production Systems
Youth Development