

## **WVU Center for Excellence in STEM Education Strategic Plan**

**Vision:**      **To break the cycle of poverty and improve health in West Virginia through education in the STEM disciplines.**

The framing of our vision:

*Improving STEM education for the university and the state is one of the five "Mountains of Excellence" supporting the university's strategic plan. With faculty working together from across the university in this trans-disciplinary effort, the WVU Center for Excellence in STEM Education aspires to make WVU a national model of high quality STEM education, encouraging more students to, and retaining more students in, courses of study that will open doors to successful STEM careers. We also intend to impact science literacy so that more of our citizens can fully participate in today's democratic process. Preparing highly qualified first-year STEM high school teachers and working with them throughout their early careers, and providing rich professional development opportunities for in-service teachers are also high priority, as we seek to improve STEM education grades K-12, throughout the state, as well as for students on our own campus and those of partnering institutions.*

**Mission:**      **To serve a key role in improving education in the STEM disciplines, grades K-20.**

The framing of our mission:

*The faculty within the Center will develop, identify and test best practices that will broaden participation, as well as improve teaching and learning in STEM fields, thereby developing a strong pipeline for STEM professionals and a scientifically literate public. This Center seeks to promote activities that improve STEM education in West Virginia K-20.*

*The Center will have a primary focus on trans-disciplinary research, which is work that blends approaches from multiple disciplines to address research questions. The Center's first areas of focus are improved high school teacher preparation in the STEM disciplines and increased recruiting and retention of STEM majors. This Center will become a place where we share what we are doing, as we look to build connections that help us all take our work to the next level, and make WVU a national model for STEM education.*

**Values:**      **The Center holds the following set of guiding core values:**

- 1. Taking an active role in educating and nurturing the next generation of scientists**
- 2. The generation and dissemination of knowledge to improve STEM educational outcomes**

3. **Open exchange of ideas and information**
4. **Equality and inclusiveness**
5. **Excellence and integrity in all we do**

### **Our Five-Year Plan:**

To realize our vision, mission, and values, the WVU Center for Excellence in STEM Education has established the following goals for 2022:

**GOAL 1: INCREASE THE NUMBER OF STUDENTS AND PROFESSIONALS IN STEM IN WEST VIRGINIA.**

**GOAL 2: INCREASE STEM PROFICIENCY FOR ALL STUDENTS IN WEST VIRGINIA AND AT WVU.**

**GOAL 3: PROVIDE A NATIONAL MODEL OF A STATE LAND GRANT UNIVERSITY SUPPORTING STEM EDUCATION AND THEREFORE ECONOMIC GROWTH FOR ITS STATE.**

### **Objectives to Support These Goals:**

The following single set of Objectives provides the mechanism to achieve all three goals above. To increase the number of students and professionals in STEM, we must provide key ingredients for increasing STEM proficiency for ALL students. Through accomplishing these two primary goals, we will be well positioned to serve as a national model for the improvement of STEM education at a major university. This improvement is being planned in such a way as to maximize the benefits to the state. We are West Virginia's University.

**Objective 1:** Design and investigate STEM learning environments (formal and informal).

**Action 1.1:** Partner with educators at WVU and other institutions to carry out this objective, seeking external funding for research-based, knowledge-generating activities.

*Aligned with University Goal 2, Objectives 1 and 3, and Action 1.*

*Aligned with CEHS Goal 1, Objective 1.2, Action 12.*

**Objective 2:** Provide more rigorous preparation for STEM students K12.

**Action 2.1:** Partner with the WV Department of Education to provide enhanced coursework for K-12 students; graduate more, better prepared new STEM teachers; and improve professional development for in-service STEM teachers.

**Action 2.2:** Partner with the WV Statewide Afterschool Network to provide enhanced afterschool and summer informal education programming for K-12 students while enhancing the preparation of new STEM teachers and improving professional development for in-service STEM teachers.

**Action 2.3:** Recruit, retain, educate, and graduate students in both the WVUteach and PhysTEC programs that are highly desired by employers.

*Aligned with University Goal 1, Objectives 2-3, and Actions 1 and 4.  
Aligned with Statler Goal 1, Actions 1 and 6.*

**Objective 3:** Increase interest in STEM careers among K-20 learners in West Virginia.

**Action 3.1:** Partner with private and public entities committed to this same goal.

*Aligned with University Goal 1, Objectives 1, and Action 4.*

**Objective 4:** Enhance the Quality and Supply of STEM Teachers.

**Action 4.1:** Partner with Colleges housing STEM majors and the College of Education and Human Services to fully implement WVUteach and PhysTEC and to support the STEM preparation received by those in all preparation programs on campus.

**Action 4.2:** Enrich Undergraduate Learning in the WVUteach and PhysTEC Programs: To build critical thinking, communication, and career transition skills needed to succeed in a world that is highly interconnected, diverse, and technology-driven.

**Action 4.3:** Provide WVUteach and PhysTEC students' effective tools to manage their college experience.

**Action 4.4:** Enhance and integrate experiential learning in each WVUteach and PhysTEC major.

**Action 4.5:** Help students understand connections between their ongoing college experiences and post-graduation life.

**Action 4.6:** Align WVUteach and PhysTEC teaching with cutting edge methods and technologies.

*Aligned with University Goal 1, Objective 2, Actions 1 and 7.*

*Aligned with Eberly Goal 1, Objectives 1-4.*

*Aligned with CEHS Goal 2, Objective 2.3, Action 1a-d.*

**Objective 5:** Meet STEM Job Needs in West Virginia.

**Action 5.1:** Partner with University and State Administrators to Establish Goals for WVU to provide graduates with the skills necessary to attain high-paying STEM jobs already available in West Virginia, and attract new jobs to West Virginia.

**Action 5.2:** Enrich Undergraduate Learning in STEM Programs: To build critical thinking, communication, and career transition skills needed to succeed in a world that is highly interconnected, diverse, and technology-driven.

**Action 5.3:** Provide STEM students' effective tools to manage their college experience.

**Action 5.4:** Help students understand connections between their ongoing college experiences and post-graduation life.

*Aligned with University Goal 5, Objective 2, and Action 2.*

*Aligned with Eberly Goal 1, Objectives 1 and 3*

*Aligned with Statler Goal 1, Actions 1-4*

**Objective 6:** Increase successful retention of students pursuing STEM majors at WVU.

**Action 6.1:** Engage in research in this important topic, forming cross-disciplinary collaborations.

**Action 6.2:** Partner with University Administrators to enact university policies that support student retention in STEM.

**Action 6.3:** Partner with Student Support Specialists and Faculty to improve the advising and mentoring received by WVU students to support retention in STEM.

*Aligned with University Goal 1, Objective 1, and Action 6.*

*Aligned with University Goal 2, Objectives 1 and 3, and Action 1.*