9-15-2023

2023 September 15 - Board of Trustees Academic, Research, and Student Success Committee Agenda and Minutes

Board of Trustees, East Tennessee State University

EAST TENNESSEE STATE UNIVERSITY
BOARD OF TRUSTEES
ACADEMIC, RESEARCH, AND STUDENT SUCCESS COMMITTEE
SEPTEMBER 2023 MEETING

8:00–9:30 a.m. EDT
Friday
September 15, 2023

East Tennessee Room
D.P. Culp Student Center
412 J.L. Seehorn Road
Johnson City, TN

COMMITTEE MEMBERS

Janet Ayers, Committee Chair
Charles Allen, Jr.
Dr. Steph Frye-Clark
Dr. Linda Latimer
Tony Treadway

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AGENDA

I. Call to Order

II. Roll Call

III. Approval of the Committee Minutes from April 21, 2023

ACTION ITEMS

IV. Recommendations for Tenure Upon Appointment of Faculty Member – *McCorkle* (5 minutes)

INFORMATION AND DISCUSSION ITEMS

V. Academic Notification for Period of January 1, 2023 through July 21, 2023 – *McCorkle* (10 minutes)

VI. Provost's Update – *McCorkle* (20 minutes)

VII. Tennessee Climate Office Presentation – *Joyner* (20 minutes)

VIII. Annual ETSU Research Corporation Update – *Golden* (30 minutes)

GENERAL INFORMATION ITEMS

IX. Committee Discussions
- General Discussion

X. Other Business

XI. Adjournment

EAST TENNESSEE STATE UNIVERSITY
BOARD OF TRUSTEES
ACADEMIC, RESEARCH, AND STUDENT SUCCESS COMMITTEE

MINUTES

September 15, 2023
Johnson City, Tennessee

The East Tennessee State University Board of Trustees' Academic, Research, and Student Success Committee met on Friday, September 15, 2023, at 8:00 a.m. in the East Tennessee Room of the D.P. Culp Student Center.

I. Call to Order

Committee Chair Janet Ayers called the meeting to order at 8:00 a.m.

II. Roll Call

Board Secretary Dr. Adam Green conducted the roll call. All committee members were physically present:

Committee Chair Janet Ayers
Trustee Charles Allen
Trustee Dr. Steph Frye-Clark
Trustee Dr. Linda Latimer
Trustee Tony Treadway

III. Approval of the Committee Minutes from April 21, 2023

The minutes from the April 21, 2023, meeting of the Academic, Research, and Student Success Committee were approved as submitted with Trustee Latimer making the motion and Trustee Frye-Clark seconding the motion. The motion passed unanimously.

ACTION ITEMS

IV. Recommendations for Tenure Upon Appointment of Faculty Member

Provost Kimberly McCorkle summarized the qualifications of Dr. Rodney Handy, who was appointed to serve as Professor and Chair in the Department of Environmental Health in the College of Public Health on July 1 of this year. Based on his exceptional qualifications, Dr. McCorkle requested that he be granted tenure upon appointment. Trustee Allen made the

motion that tenure be granted, and Trustee Treadway seconded the motion. It passed unanimously.

INFORMATION AND DISCUSSION ITEMS

V. Academic Notification for Period of January 1, 2023, through July 21, 2023

This agenda item, presented by Provost McCorkle, consisted of two parts: curriculum actions that require Tennessee Higher Education Commission notification and ETSU academic approval items that do not require such notification.

Changes submitted to THEC include:

- Six revisions in student credit hours, most involving a reduction of credits, with the goals of keeping content relevant and avoiding repetition.
- Plans to establish new certificate programs in Healthcare Spanish; Child Advocacy Studies Training; Interprofessional Pediatric Feeding; Educator Job Embedded; Student Affairs; and Child Advocacy Studies.
- Five concentration name changes.
- Four new concentrations within existing programs
- One academic program name change and the termination of the academic concentration in Counselor Leadership.

ETSU approval items include several program policy revisions as well as the establishment of two minors: Synthetic Biology and Forensic Science.

General discussion took place about the length of time required by THEC for program reviews. The consensus was that, in many cases, reviews at the state level are taking far too long. Chair Ayers requested that Provost McCorkle provide a list of curricular actions requiring THEC approval and the status of those approval processes.

VI. Provost's Update

Provost McCorkle's report to the committee consisted of six parts: Academic Administration, Academic Programs and Curriculum, Research and Scholarship, Faculty Affairs, Going Beyond, and Student Success Initiatives.

Her report included the following highlights:

- The Academic Structure Task Force continues its work in designing an academic structure that will more efficiently serve the students, faculty, staff, community, and mission of ETSU.
- This year, ETSU will complete the review of 79 academic policies.

- Accreditation reviews for 2023-24 include Music and Physical Therapy. The review of Nursing included a site visit last week, and Provost McCorkle indicated that it resulted in many positive comments and special praise for ETSU's seven nurse-managed clinics.
- A summary of the status of three new academic programs: Synthetic Biology, Bio-Engineering, and Mechatronics.
- An update on the general education redesign with an expected implementation in the spring of 2024.
- A $70 million award for sponsored projects for fiscal year 2022 at ETSU with federal awards for the fiscal year totaling over $22 million, while research and development expenditures topped $23 million.
- Information on events to promote research participation and foster interdisciplinary collaboration including the ETSU Trailblazer Series and the New Faculty 3-Minute Mixer.
- The welcoming of 120 new faculty who were provided the first of four challenge coins they earn throughout their career at ETSU.
- The launch of a new Campus Read program and that the first book, selected for this year is *The War for Kindness: Building Empathy in a Fractured World*, by Jamil Zaki.
- A new Community-Engaged Learning (CEL) designation for courses that provide students with community-engaged learning experiences.
- A report from Trent White, President of the ETSU Student Government Association, who spoke about the administration's student-focused approach.
- A report from Dr. Joe Sherlin, Vice President for Student Life and Enrollment That highlighted the success of ETSU's Academic Coaching initiative, which pairs incoming students with a trained peer mentor.

President Noland thanked and commended Provost McCorkle and her staff for their efforts to lead some of the most significant academic changes in decades at the university.

VII. Tennessee Climate Office Presentation

The Tennessee Climate Office (TCO), which is part of the ETSU Department of Geosciences, is the official climate office for the state of Tennessee. The committee heard a report on the office's work from Dr. Andrew Joyner, Associate Professor of Geosciences and Tennessee State Climatologist. He was assisted by Wil Tollefson, Lecturer in Geosciences and Tennessee's Assistant State Climatologist.

Dr. Joyner informed the committee that state climate offices provide state-specific products, data, event histories, and archiving. In addition, they coordinate with state agencies on extreme events, hazard mitigation, and other priorities.

Among the office's goals is the creation of a statewide mesonet, which is a weather network that can provide data to a variety of stakeholders, including agriculture, education, emergency management, the energy industry, environmental research, management of prescribed burns

and wildfires, transportation, and weather forecasting. The mesonet proposal involves $2.7 million for the first year and $750,000 annually in recurring costs.

Dr. Joyner reviewed several grants currently being administered through his office, including two from FEMA, one from TEMA, and one from the Tennessee Department of Transportation, totaling more than $1 million.

Discussion by the committee centered around the value of the work being done for the entire state and the need to inform more people about the existence of the Tennessee Climate Office at ETSU.

VIII. Annual ETSU Research Corporation Update

David Golden, Chief Executive Officer of the ETSU Research Corporation, presented an update to the committee on recent accomplishments related to building connections between the university and industry partners to advance regional prosperity and entrepreneurialism. Golden described current initiatives including the RC Content Studio, StoryCollab, the Center for Bioindustrial Manufacturing, the Innovation Lab, the Center for Innovation, K-12 initiatives and partnerships, and the Regional Higher ED^2 Council Initiative. Golden described ways in which the ETSU Research Corporation is working to achieve its mission as it helps to expand ETSU's impact in research and innovation across disciplines. Among the highlights of the report:

- Several hundred individuals attended Growing the Future: A Symposium on Innovation and Education for the Bioeconomy, organized by the Center for Bioindustrial Manufacturing and held last October.
- The occupancy of the Innovation Lab is now at 97 percent, with 22 companies on board.
- The Center for Innovation has established its administrative, financial, and working organization, with several programs in the planning stages and in the process of being established. Among its current programs are the Valleybrook Synbio Industrial Manufacturing Facility and Programs; ß-Tech Accelerator; and entrepreneurial and academic software.
- The ETSU Research Corporation has convened the Regional Higher ED^2 Council Initiative to connect regional economic development officers and the innovation/economic development offices of ETSU and other regional higher education entities.

GENERAL INFORMATION ITEMS

IX. Committee Discussions

No further discussions were held.

X. Other Business

There was no other business to come before the committee.

XI. Adjournment

The committee was adjourned by Trustee Ayers at 9:53 a.m.

Respectfully submitted,

Adam Green
Secretary of the Board of Trustees

Approved by the Board of Trustees at its November 17, 2023 meeting.

EAST TENNESSEE STATE UNIVERSITY
BOARD OF TRUSTEES

ACTION ITEM

DATE:	September 15, 2023
ITEM:	Approval of the Minutes from April 21, 2023
COMMITTEE:	Academic, Research, and Student Success Committee
RECOMMENDED ACTION:	Approve
PRESENTED BY:	Dr. Adam Green Board Secretary

The minutes of the April 21, 2023 meeting of the Academic, Research, and Student Success Committee are included in the meeting materials.

MOTION: I move that the Board of Trustees adopt the resolution, approving the minutes as outlined in the meeting materials.

> **RESOLVED: The reading of the minutes of the April 21, 2023 meeting of the Academic, Research, and Student Success Committee is omitted, and the minutes are approved as presented in the meeting materials, provided that the Secretary is authorized to make any necessary edits to correct spelling errors, grammatical errors, format errors, or other technical errors subsequently identified.**

EAST TENNESSEE STATE UNIVERSITY
BOARD OF TRUSTEES
ACADEMIC, RESEARCH, AND STUDENT SUCCESS COMMITTEE

MINUTES

April 21, 2023
Johnson City, Tennessee

The East Tennessee State University Board of Trustees' Academic, Research, and Student Success Committee met on Friday, April 21, 2023, at 8:00 a.m. in the East Tennessee Room of the D.P. Culp Student Center.

I. Call to Order

Committee Chair Janet Ayers called the meeting to order at 8:00 a.m.

II. Roll Call

Board Secretary Dr. Adam Green conducted the roll call. Committee members present were:

Committee Chair Janet Ayers
Trustee Charles Allen
Trustee Dr. Virginia Foley
Trustee Dr. Linda Latimer
Trustee Melissa Steagall-Jones

Other Trustees who attended the committee meeting included: Allen Archer, Steve DeCarlo, and Dorothy Grisham.

III. Approval of the Committee Minutes from February 17, 2023

The minutes from the February 17, 2023, meeting of the Academic, Research, and Student Success Committee were approved as submitted with Trustee Latimer making the motion and Trustee Foley seconding the motion. The motion passed unanimously.

ACTION ITEMS

IV. Promotion and Tenure of Faculty Members

After briefly describing the promotion and tenure processes, which begin in the fall semester, Provost Kimberly McCorkle presented to the committee the names of 56 ETSU faculty members being recommended for promotion and/or tenure. Trustee Foley made a motion that the recommendations be approved as presented, and Trustee Steagall-Jones seconded the motion. The motion passed unanimously.

V. Proposed Change of Name: Clemmer College

In presenting the rationale for a proposed name change, Clemmer College Dean Janna Scarborough said Clemmer currently includes 10 undergraduate majors/concentrations, 16 minors, 23 graduate degree programs including three doctoral programs, 16 graduate certificate programs, four research and practice centers, University School, and a Community Counseling Center. Dean Scarborough said the college is best known for educating thousands of the region's teachers, but about half of the college's graduates do not go into teaching. She described the various kinds of careers that Clemmer graduates are pursuing.

Dean Scarborough told the committee that in 2017, the college engaged in a renaming process, with the name Clemmer College put forward in 2018. However, instead of reflecting the variety and complexity of the college, that name change created vagueness and confusion. Thus began a strategic visioning process to reexamine the name, with a desire for representation, clarity, and connections. College faculty and staff examined peer universities for ideas and trends, reviewed the most popular names previously put forward by faculty and staff, and reopened a naming survey. The name that received the most support among constituent groups of the college and achieved consensus within the college's leadership team was: Clemmer College of Education and Human Development.

Trustee Foley made a motion that the board approve the new name, *Clemmer College of Education and Human Development*. Trustee Latimer seconded the motion. The motion passed unanimously.

INFORMATION AND DISCUSSION ITEMS

VI. Update on Center for Nursing Advancement

Committee members received a status report on the Appalachian Highlands Center for Nursing Advancement from Dr. Leann Horsley, Dean of the ETSU College of Nursing, and Dr. Holly Wei, Associate Dean for Research and Scholarship.

Dr. Wei pointed out that among the issues prompting the formation of the center are nurse well-being and the need for a healthy work force, given the fact that nurses are at the front and center of our health care system.

Addressing these needs and many others, the Tennessee Center for Nursing Advancement was established by the General Assembly and was charged with:

- Developing a statewide plan for nurses based on a detailed analysis of workforce needs;
- Establishing and maintaining a database of nursing workforce needs;
- Routinely convening representatives of nursing professionals, healthcare professional organizations, business and industry leaders, and others to solicit their views and recommendations for the Center;
- Recognizing nurses and the accomplishments of nurses and conveying a positive image of nursing to Tennessee; and
- Increasing the pipeline for nursing education.

Dean Horsley then reviewed the history of the Appalachian Highlands Center for Nursing Advancement. The center's four foci are: building a pipeline for CNA, LPN, and RN quality education in all areas of Tennessee; innovative clinical and academic models; nurse well-being; and developing, aggregating, and increasing accessibility to nursing data. Primary objectives of the center for 2023 include:

- Establish well-being baselines and identify trends relating to recruitment and retention across 30 trial hospitals;
- Test programs within the region and demonstrate activity with a positive impact on recruitment and/or retention; and
- Establish organizational strategy, structure, systems, and partnerships, ready for 2024 within approved budget.

Discussion took place about strategies to recruit more nursing students and how to retain them in the region once they graduate. Committee members stressed the need for nurse well-being in addressing these pipeline issues.

VII. Faculty Research Update: Supporting STEM Education in Northeast Tennessee and Beyond

Dr. Alissa Lange, Director of the Center of Excellence in STEM Education at ETSU, spoke to the committee about the collaborative nature of the work currently occurring both on the campus and beyond.

Dr. Lange indicated that growth in STEM-related jobs will continue to be strong, with an eight percent increase expected by 2029, compared to all other jobs at under four percent. Yet, she said, opportunities are not equal. To illustrate that point, she shared a map showing origins of inventors and patent rates by area where children grew up. The lowest numbers are in the southeastern United States. However, she asserted, this can be

changed through several priorities: to engage in equity, to focus on innovation, to empower educators, to cultivate partnerships, and to expand our reach.

As examples of those priorities, she highlighted:

- Libraries Count, a three-year applied research project focusing on mathematics for diverse young children and their families
- Coding camps for elementary and middle schoolers led by Washington Elementary and ETSU
- STEM collaboration involving the university, area schools, and communities that has already resulted in 19 publications that will be part of STEM curricula
- STEM education-work force partnerships "from cradle to career"
- A three-year grant exceeding $5 million awarded to ETSU's Dr. Chih-Che Tai by the Institute of Education Sciences to improve computational thinking and literacy for school leaders

Dr. Noland described the commonality between this presentation and the previous one on the nursing profession as they are two vital pipeline programs. As an example, he told the committee that the U.S. needs some 300,000 more nuclear engineers than we currently have in the workforce. He said the foundation for these careers, and careers in nursing, starts in STEM. He added that Dr. Tai's grant is "transformational."

VIII. Student Life and Enrollment Update

Dr. Joe Sherlin, Vice President for Student Life and Enrollment, told the committee that ETSU's efforts to attract new students focus on four pillars, from recruitment through orientation: academic quality, experience, affordability, and location. He said that data collected since the pandemic indicate we are succeeding:

- Individual campus tours are up 27 percent and group tours 200 percent
- Counselor Connect events are up 104 percent
- Intents to enroll are up 56 percent
- Nashville area admits are up 33 percent as ETSU expands its footprint
- Preview attendance is up 30 percent

Furthermore, Dr. Sherlin announced the availability of Navigate Student, a virtual one-stop shop to schedule appointments with advisors and tutors, view course schedules, and look up information for over 80 ETSU resources.

In the vital area of student well-being, student CARE team reports are up 107 percent over the last five-year period. Mental health reports are up 200 percent during that same

period. And this year, the amount of food distributed through Bucky's Pantry is up 20 percent, at 11,000 pounds.

In the category of student engagement, Dr. Sherlin reported the following:

- Buctainment participation for the fall semester of 2022 was up 28 percent
- The Student Government Association concert series is on track to surpass 10,000 attendees
- Peer involvement mentoring is up 70 percent over the last five years
- ETSU VOTES was recognized by the Tennessee Secretary of State for its 2022 voter registration efforts
- Volunteer ETSU is partnering with over 150 nonprofit agencies
- The *East Tennessean* student newspaper observed its 100th anniversary this year

Dr. Sherlin told the committee that student mental health continues to be one of the most serious challenges faced by ETSU and colleges and universities all across the country. He said the most cited stressors among college students are anxiety, depression, and isolation. In a nationwide survey, 40 percent of undergraduates expressed feelings of emotional stress and have considered dropping out of school in the last six months. Persistent feelings of sadness or hopelessness have increased almost 10 percent in high school males and over 20 percent in high school females over the last 10 years. In addition, 60 percent of parents say the pandemic had a negative effect on their college students' learning, and almost half think the effect is ongoing. Rural, underserved, and low-income communities are disproportionately affected.

Dr. Sherlin said ETSU is addressing these challenges through holistic, relationship-rich support and by closing equity gaps. ETSU leads the state in improvement of six-year, first-time, full-time graduation rates. Complicating the situation in our region, however, are downward trends in college-going rates. In particular, beginning with 2017 and going through 2021, Dr. Sherlin noted Washington County's decrease of almost 21 percent, Sullivan's decrease of 11 percent, and Carter's drop of over 15 percent. He added that these figures are a call for P20 efforts.

Trustee Ayers added that Unicoi County is not seeing these kinds of decreases and lauded that county's "one student at a time" approach as a major reason why.

GENERAL INFORMATION ITEMS

IX. Committee Discussions

No further discussions were held.

X. Other Business

There was no other business to come before the committee.

XI. Adjournment

The committee was adjourned by Trustee Ayers at 9:37 a.m.

EAST TENNESSEE STATE UNIVERSITY
BOARD OF TRUSTEES

ACTION ITEM

DATE:	September 15, 2023
ITEM:	Recommendation for Tenure Upon Appointment of Faculty Member
RECOMMENDATION:	Approve
COMMITTEE:	Academic, Research, and Student Success
PRESENTED BY:	Dr. Kimberly D. McCorkle Provost and Senior Vice President for Academic Affairs

The University awards tenure to faculty whose professional abilities and accomplishments warrant the degree of permanence afforded by academic tenure. Faculty rank recognizes the past achievements of a faculty member and expresses confidence that the faculty member is capable of even greater accomplishments and increased levels of responsibilities that support the mission of the University.

MOTION: I move that the Academic, Research, and Student Success Committee recommend adoption of the following Resolution by the Board of Trustees:

> **RESOLVED: Faculty rank and the awarding of tenure is granted to the faculty member recommended by the President as outlined in the meeting materials.**

East Tennessee State University
Office of the President
Box 70734 • Johnson City, Tennessee 37614-1710 • (423) 439-4211 • Fax: (423) 439-4004

September 15, 2023

Dr. Adam Green
Secretary of the Board of Trustees
East Tennessee State University

Dr. Green,

I recommend that the Board of Trustees award the appropriate faculty rank and tenure upon appointment to Dr. Rodney Handy, whose accomplishments are described below.

Recommended for Tenure upon Appointment

Dr. Rodney Handy — **Environmental Health**
College of Public Health

Dr. Rodney Handy was appointed to serve as professor and chair in the Department of Environmental Health in the College of Public Health on July 1, 2023. During his career, he has secured funding for over 175 projects that resulted in a total of $15 million awarded. He led the master's program in occupational health with an emphasis in industrial hygiene through ABET re-accreditation and led over 75 continuing education sessions for companies or government entities. Dr. Handy comes to East Tennessee State University from the University of Utah where he held the position of Interim Vice Chair of Education and Research, tenured professor, and Director of Industrial Hygiene, Occupational and Environmental Health programs in the Department of Family and Preventative Medicine. Dr. Handy earned his Ph.D. in Environmental Engineering Sciences from the University of Florida. He earned his M.B.A. from Ball State University, a B.S. in Mechanical Engineering from Purdue University, and an A.A.S. in Mechanical Engineering Technology from Purdue University. He has held special faculty status at the University of North Carolina at Chapel Hill as well as tenured positions at Western Kentucky University and Purdue University. Dr. Handy holds national distinction in his field and is recognized for his leadership, consultation, and scholarly work in industrial engineering.

I am honored to recommend Dr. Handy for tenure at the rank of professor.

Sincerely,

Brian Noland
President

CC: Kimberly D. McCorkle, Provost and Senior Vice President for Academic Affairs
Human Resources

RODNEY G. HANDY, MBA, PhD, CIH

Current Position and Recent Appointments

Professor, Department of Family and Preventive Medicine (7/15-present) *Tenured Interim Vice Chair of Education and Research* – Department of Family and Preventive Medicine, University of Utah: (10/18-7/19)
Director of Industrial Hygiene and NIOSH Targeted Research Training (TRT) – Division of Occupational and Environmental Health - Department of Family and Preventive Medicine, University of Utah: (7/15-6/19)
Special faculty status in Gillings School of Global Public Health (NC-OSHERC), The University of North Carolina at Chapel Hill

Research Interests

Exposure Sciences, Environmental Health & Safety Engineering, Heat Stress Assessments, Green Engineering and Sustainability, Construction Health & Safety Issues

Candidate's Summary

I am a technical professional with a strong industry background and over thirty years of experience. This experience has been divided up between academia, consulting, and industry. After completing my baccalaureate degree, I was a plant/manufacturing engineer in the automotive industry. My teaching and industrial training/consulting experience has been primarily in engineering technology, industrial environmental management, and environmental/occupational health. During my career, I have been instrumental in securing more than one hundred seventy-five funded projects, with the majority in the role of PI. Lastly, I have approximately fifteen years of program director and vice/associate chair leadership experience in either permanent or interim roles.

Education

Ph.D., *Environmental Engineering Sciences*, University of Florida, 1990-95
Master *Business Administration (MBA)*, Ball State University, 1987-89
B.S., *Mechanical Technology (now Mechanical Engr Tech)*, Purdue University, 1981-83
A.A.S., *Mechanical Engineering Technology*, Purdue University, 1979-81

Professional Societies

American Board of Industrial Hygiene (ABIH)
American Industrial Hygiene Association (AIHA) & Utah Section AIHA (president)
American Conference of Governmental Industrial Hygienists (ACGIH)

Certifications

Certified Industrial Hygienist (CIH) 1999

University Courses Taught (1995 through 2022)

Graduate level:
OEHS 6756 Hazardous Substances (University of Utah – August 2021 through current)
OEHS 6752 Introduction to Industrial and Environmental Toxicology and Physiology (University of Utah – January 2016 through current)
OEHS 6754 Noise and Other Physical Agents (University of Utah – August 2015 through current)
OEHS 6730 Quantitative Risk Assessment (University of Utah – August 2016 through December 2016)
OEHS 7800 TRT Doctoral Seminar (University of Utah – January 2017 through December 2019)
CMET 6240 Safety and Risk Management (University of North Carolina Charlotte – August 2012 through May 2015)
MET 5900 Organizational Environmental Quality (Purdue University – 2004 through 2012)
EOHS 510 Water/Wastewater Science (Western Kentucky University 2000 through 2004)
PH 584 Environmental Health (Western Kentucky University – 2000 through 2004)
EOHS 580 Solid and Hazardous Wastes (Western Kentucky University – 2000 through 2004)
EOHS 571 Air Pollution Control (Western Kentucky University – 2000 through 2004)
EOHS 577 Toxicology (Western Kentucky University – 2000 through 2004)
Environmental Fate Transport (Old Dominion University – 1995 through 1996)
Fundamentals of Industrial Hygiene (Old Dominion University – 1995 through 1996)

***Undergraduate level*:**
ETFS 1244 Water-Based Fire Suppression (University of North Carolina Charlotte – 2014 through 2015)
ETFS 2230 Hazardous Materials (University of North Carolina Charlotte – 2013 through 2015)
ETFS 4243 Research Methodology (University of North Carolina Charlotte – 2013 through 2015
ETME 3283 HVAV Engineering Design and Application (University of North Carolina Charlotte - 2012 through 2015)
ETME 4244L Thermal Fluids Laboratory (UNC Charlotte - 2012 through 2015)
MET 490 Green Manufacturing & Sustainability (Purdue Univ. - 2004 through 2012)
MET 313 Fluid Mechanics (Purdue University - 2008 through 2012)
MET 241 Polymeric Materials and Processes (Purdue University - 2004 through 2008)
MET 144 Materials and Processes (Purdue University - 2004 through 2012)
EHS 280 Introduction to Environmental Science (Western Kentucky University - 1996 through 2004)
Several courses such as Fundamentals of Industrial Hygiene, Water/Wastewater Science, Air Pollution Sciences, Risk Assessment, Solid and Hazardous Wastes (Western Kentucky University – 1996 through 2004)

Professional Experience

2015-2019 University of Utah

Professor of Industrial Hygiene and Occupational and Environmental Health Programs – Director of Industrial Hygiene, Occupational and Environmental Health Programs and Targeted Research Training – Interim Vice Chair of Education and Research (2018-19): Responsibilities included instruction of courses in noise and physical agents, environmental and occupational toxicology and physiology, quantitative risk assessment, and targeted research training seminars. During the time frame, I acted as the vice chair of education and research for the department as well as the director of industrial hygiene, occupational and environmental health programs, and targeted research training (TRT). I served as the chair of the education mission committee for the department from 2016-2019 and on 7 departmental search committees during this time, co-chairing the recent division chief of public health search. Instrumental in increasing the number of graduate students pursuing a MSOH degree by approximately 100% since 2015.

2012-2015 University of North Carolina Charlotte

Professor of Fire Safety Engineering Technology: Responsibilities included courses in hazardous materials management, fire suppression science, and risk and safety management/sciences. I acted as the associate chair for research cultivation. Significant research contracts were secured from the USDOE – B&W/Y-12, Parker Hannifin and ASHRAE. I was initially hired as a tenured, full professor. Due to unique opportunities for both my spouse and I at the University of Utah, with an overall 20% pay increase, the decision was made to resign our positions and relocate to Utah.

2004-2012 Purdue University

Associate-to-Professor of Engineering Technology: Responsibilities included teaching courses in green manufacturing/processes and organizational environmental quality. I acted as both the departmental health and safety chair and the graduate education chair during my tenure. Sought and received funding from several sources, most notably from Alcoa Inc., US Department of Energy and the US Department of Labor. I provided significant environmental health and safety assistance to Indiana business and industry through the Purdue Technical Assistance Program (TAP). I was promoted from associate professor to full professor in 2011. Due to a leadership opportunity being offered to me at the University of North Carolina Charlotte in a program more aligned with my background, the decision was made to resign my position and relocate to North Carolina.

Professional Experience (continued)

1996-2004 Western Kentucky University

Director of the Environmental Health Sciences Program and the Environmental Health & Safety Resource Center (EHSRC), Assistant-to-Associate Professor of Engineering Technology/Public Health: Responsible for teaching courses both undergraduate and graduate courses in environmental science, environmental health, fundamentals of industrial hygiene, chemical and physical hazards, hazardous waste management, water/wastewater, air pollution control, and environmental engineering sciences. Sought and received funding from several private sources for applied research. I was the Director of EHSRC from 1999-2004 and the undergraduate academic program director from 2002-2004. I was tenured and promoted to associate professor in 2000. Due to opportunities at my alma mater for both my spouse and I, the decision was made to resign our positions and relocate to Indiana.

1995-1996 Old Dominion University

Assistant Professor of Industrial Hygiene and Environmental Health Sciences: Responsibilities included teaching courses in the industrial hygiene, environmental fate transport, hazardous waste management, and OSHA program management. I served on Ph.D. and MS graduate committees for environmental health students. In order to get closer to my family, the decision was made to resign this position and relocate after just one year.

1984-1989 Ford Motor Co.-EED

Plant/Manufacturing Engineer: Responsibilities included capital justification, facilities maintenance supervision, mechanical and electrical design, industrial hygiene sampling, facilities layout, environmental controls, and OSHA compliance. My major oversight responsibilities included a significant expansion of the overall facilities and production operations. While working full-time in this position, I decided to teach part-time during the evening. I really enjoyed teaching and decided to resign my position and go back to school full-time for my MBA and PhD. I was a full-time PhD student from 1990-1995.

1981-1983 Wabash-Datatech

Electromechanical Technician: Responsibilities included maintenance and troubleshooting of all facility automation and equipment. This was an original computer floppy diskette company, making 8-1/2" and 5-1/4" diskettes for Tandy, Commodore and IBM. I decided to resign this position to return to the main campus of Purdue to complete my BS degree in 1983.

Journal Articles (13 first author; 15 senior author)

(1) Mathis, T., Handy, R., Daher, N., Edie, R., Henry, T, Spooner, S. (in review). A preliminary study involving ethylene oxide (EtO) ambient air exposures and human health modeling in the Rocky Mountain West. *Hygiene and Environmental Health Advances.*

(2) Boregowda, S., Handy, R., and Whitt, M. (in review). Entropic assessment of physiological stress response using statistical process control charts. *Entropy.*

(3) Kuhre, J., Handy, R., Thiese, M., Schaefer, C., and Sleeth, D. (in review). A comparison of occupational blood lead level (BLL) prevalence and airborne lead concentration in Utah and nationally. *Journal of Heavy Metal Toxicity and Diseases.*

(4) Ho, A., Handy, R., Sleeth, D., Schaefer, C., Zhang, Y., Pahler, L., Ramsay, J., and Collingwood, S. (in review). Aerosol measurement degradation in low-cost particle sensors using laboratory calibration and field validation. *Toxics.*

(5) Teniza, G., Sleeth, D., Handy, R., Jones, R., Verpaele, and Harper, M. (in review). Comparison of comparable aerosol samplers during simulated personal sampling. *Journal of Occupational & Environmental Hygiene*.

(6) Riches, N., Pahler, L., Ramsay, N., Schreiber, M., Sleeth, D., Thiese, M., Handy, R., and Perry, K. (in review). Multipollutant profile of PM 2.5 for Salt Lake City, UT. *Journal of Environmental Health*.

(7) Mashhadi, A., Handy, R., Farhadmanesh, M., Honda, T., Sleeth, D., Henry, T. (2022). Feasibility study of using nebulizer-retrofitted UAVs at construction projects: The case study of residential jobsites in Utah. *Journal of Construction Engineering and* Management, 148(10) 05022009.

(8) Agyemang, D., Madden, E., English, K., Venner, K., Handy, R. Singh, T., Qeadan, F. (2022). A Trend Analysis of the Prevalence of Opioid Misuse, Social Support, and Suicide Attempt among American Indian/Alaska Native High School Students in New Mexico: 2009-2019 Youth Risk Resiliency Survey (YRRS). *BMC Public Health,* 22(370).

(9) Agyemang, D., Madden, E., English, K., Venner, K., Handy, R. Singh, T., Qeadan, F. (2022). The mediation and moderation effect of social support on the relationship between opioid misuse and suicide attempts among Native American youth in New Mexico: 2009-2019 Youth Risk Resiliency Survey (NM-YRRS). *BMS Psychiatry*, 22(243).

(10) Young, B., Sleeth, D., Handy, R. and Pahler, L. (2021). The recovery of volatile organic compounds and volatile sulfur compounds in fused-silica lined canisters, polyvinyl fluoride/Tedlar® bags, and foil-lined bags. *ACS Chemical Health & Safety* 28(6), 426-435.

(11) Reeves, K., Loder, R., Handy, R., Sleeth, D., Schaefer, C. (2021). A review of anthropogenic environmental hazards encountered by National Park first responders. *Disaster Medicine,* 9, 1-2.

(12) Scholl, L., Thiese, M., Handy, R. (2022). Incidence of workers' compensation claims in opioid-using truck drivers. *Journal of Occupational and Environmental Medicine*, 64(4), 314-319.

(13) Handy, R., Jackman, J., Moloney-Johns, A., Loder. R., Curran, S., Valentin, V., Rolls, J., and Schaefer, C. (2021). Administering a physician assistant program during the COVID-19 pandemic. *Journal of Physician Education Association*, 32(2), 119-122.

(14) Robello, R., Lake, K, Handy, R., Sleeth, D., Schaefer, C., and Collingwood, S. (2021). A quantitative comparison of heavy metals concentrations in the soils on two Rocky Mountain West tribal reservations. *Journal of Student Research*, 10(1). doi.org/10.47611/jsr.v10i1.1182.

(15) Ellis, M., Handy, R., Pahler, L., Sleeth, D., and Schaefer, C. (2021). A pilot observational study comparing wet bulb globe temperature (WBGT) parameter measurements as a result of kitchen configurations. *Journal of Student Research*, 10(1). doi.org/10.47611/jsr.v10i1.1181.

(16) Boregowda, S., Downing, B., and Handy R. (2021). Quantitative assessment of psychophysiological stress reactivity using thermodynamics. *Journal of Human Ergology*, 50(1), 29-38.

(17) Webb, L., Handy, R., Stenberg, J., Sleeth, D., Schaefer, C., Qeadan, F., and Collingwood, S. (2021). Indoor air quality issues for Rocky Mountain West tribes. *Frontiers in Public Health* 9:606430. doi: 10.3389/fpubh.2021.606430.

(18) Mecate, D., Handy, R., Pahler, L., Sleeth, D., and Ramsay, J., C. Schaefer (2020). Temperature inversion and ultrafine particulate/near ultrafine particulate matter concentrations in the Salt Lake Valley. *Technium: Romanian Journal of Applied Sciences and Technology*, 2(7), 422-435.

(19) Phillips, H., Handy, R. Sleeth, D., Thiese, M., Schaefer, C., and Stubbs, J. (2020). Taking the "LEED" in indoor air quality: Does certification result in healthier buildings? *Journal of Green Building*, 15(3), 55-66.

(20) Haggerty, L., Reischl, U., Handy, R., Sleeth, D., Adams, K, and Schaefer, C. (2020). The thermodynamics of indoor air pollution: A pilot study emulating traditional Kenyan cooking techniques. *Sustainable Cities and Society*, 53, 101926.

(21) Thomas, J., Pahler, L., Handy, R., Thiese, M., and Schaefer, C. (2019). Pilot study predicting body core temperatures in hot work environments using thermal imagery. *Journal of Chemical Health and Safety*, 26(6), 75-83.

(22) Thiese, M., Okorie, O., Murtaugh, M., Sheng, X., Handy, R. and Hegmann, K. (2019). Relationships between poor health and calories from fat among commercial drivers. *Journal of Occupational and Environmental Medicine,* 61(11), 944-948.

(23) Cox, A., Handy, R., Thiese, M. and Sleeth, D. (2019). Development of an empirical formula for describing human inhalability of particles at low wind speeds and calm air. *Annals of Work Exposures and Health,* 63(9), 1046-1060.

(24) Borsh, F., Sleeth, D., Handy, R., Pahler, L., Andrews, R., and Ashley, K. (2019). Evaluation of a 25-mm disposable sampler relative to the inhalable aerosol convention. *Journal of Occupational and Environmental Hygiene,* 16(9), 634-642. doi.org/10.1080/15459624.2019.1632463

(25) Pahler, L., Zmoos, J., Wong, B., Sleeth, D., Handy, R., and Collingwood, S. (2019). Investigating measurement variation of modified low-cost particle sensors. *Journal of Aerosol Science*, 135, 21-32. doi.org/10.1016/j.jaerosci.2019.04.017

(26) Cox, A., Sleeth, D., Handy, R., and Alaves, V. (2019). Characterization of CO and NO_2 exposures of ice skating rink maintenance. *Journal of Occupational and Environmental Hygiene,* 16(2), 101-108.

(27) Clingenpeel, S., Handy, R., Pahler, L., and Sleeth, D. (2019). A comparative evaluation of the effectiveness of wipe sampling materials to remove beryllium from differently textured surfaces using zinc oxide as a surrogate. *Journal of Chemical Health and Safety*, 26(1), 15-22.

(28) Vercellino, R., Sleeth, D., Handy, R., Collingwood, S. (2018). Laboratory evaluation of a low-cost, real-time, networked aerosol multi-sensor. *Journal of Occupational and Environmental Hygiene,* 15(7), 559-567.

(29) Jackson, M., Nelson, J., Whitfield, M., Morrell, J., Handy, R., and Schmidt, P. (2018). Chip formation and similarity in the plano-grinding of

explosive surrogates. *Proceedings of the Institution of Mechanical Engineers Part B: Journal of Engineering Manufacture*, 232(12), 2071-2082. doi:10.1177/0954405416683972

(30) Pahler L., McKenzie-Smith, D., Handy, R., and Sleeth, D. (2018). Development of custom calibration factors for respirable silica using standard methods compared to photometric monitoring data. *Journal of Chemical Health and Safety,* 25(1), 27-35.

(31) Thorsen, M., Handy, R., Sleeth, D., Thiese, M., and Riches, N. (2017). A comparison study between previous and current shoreline concentrations of heavy metals at the Great Salt Lake using portable x-ray fluorescence. *Human and Ecological Risk Assessment: An International Journal,* 23(8), 1941-1954.

(32) Boregowda, S., Handy, R., Sleeth, D., and Riches, N. (2017). Using thermodynamic degradation approach to quantify human stress response. *Journal of Thermodynamics*, 2017 (Article ID #7546823), 8 pages. doi:10.1155/2017/7546823.

(33) Schmidt, P., Nelson, J., Handy, R., Morrell, J., Jackson, M., and Rees, T. (2017). Non-contact measurements of acoustic emissions from the single point turning process. *International Journal of Advanced Manufacturing Technology*, 93(9), 3907-3920.

(34) Simons, A., Handy, R., Pahler, L., Sleeth, D., and Thiese, M. (2017). A comparison study between passive and active workplace personal air monitoring techniques for airborne isopropyl alcohol concentrations. *Journal of Chemical Health and Safety*, 26(6), 36-43.

(35) Jackson, M., Lathery, E., Whitfield, M., Handy, R., da Silva, M., Machado, A., and da Silva, R. (2017). Computational analysis of turning G10530 steel to eliminate chip crowding using variable cutting speeds. *International Journal of Advanced Manufacturing Technology*, 92(5-8), 2341-2363.

(36) Jackson, M., Novakov, T., Whitfield, M., Robinson, G., Handy, R., Sein, H., and Ahmed, W. (2017). VFCVD diamond-coated cutting tools for micro-machining titanium alloy Ti6Al4V. *International Journal of Advanced Manufacturing Technology*, 92(5-8), 2881-2918.

(37) Stewart, J., Sleeth, D., Handy, R., Pahler, L., Anthony, R., and Volckens, J. (2017). Assessment of increased sampling flow rates in a disposable, inhalable aerosol sampler. *Journal of Occupational & Environmental Hygiene,* 14(3), 207-213.

(38) Boregowda, S., Handy, R., Sleeth, D., and Merryweather, A. (2017). Constructal model of Fitts's law to predict speed-accuracy trade-off. *International Journal of Design & Nature and Ecodynamics.* 12(1), 44-54.

(39) Holm, C., Pahler, L., Thiese, M. and Handy, R. (2016). Evaluation of physiological strain in hot work areas using thermal imagery. *Journal of Thermal Biology,* 61(10), 8-15.

(40) Schmidt, P., Handy, R., Anderson, T., Rees, T., Morrell, J., and Jackson M. (2016). Residual surface stress: Comparing traditional and modulated tool path machining processes. *Materials Science and Technology,* 32(14), 1471-1483.

(41) Boregowda, S., Handy, R., Sleeth, D., and Merryweather, A. (2016). Physiological entropy generation as a metric to characterize human system stress response. *Journal of Thermodynamics,* 2016 (Article ID #4932710), 8 pages. doi:10.1155/2016/4932710.

(42) Handy, R., Newell, D., Dunn, B., and Yang, W. (2015). Four-gas air monitors: A survey of first responders' competencies. *Fire Engineering,* 168(11), 53-61.

(43) Whitt, M., Duvall-Couetil, N., Handy, R., Boregowda, S., and Senarith, P. (2013). Value mitosis – a methodology to develop community empowerment. *Journal of International Business and Economics*, 13(3), 97-110.

(44) Boregowda, S., and Handy, R. (2013). Conceptual framework for complexity modeling of societal stress and biophysical resilience. *ARPN Journal of Engineering and Applied Sciences*, 8(6), 413-418.

(45) Rodgers, K., Handy, R., Hutzel, W. (2013). Energy reduction using biofiltration in a highly efficient residential home. *Journal of Green Building*, 8(1), 21-27.

(46) Boregowda, S., Choate, R., and Handy, R. (2012). Entropy generation analysis of human thermal stress responses. *ISRN Thermodynamics*, 12, 1-11.

(47) Boregowda, S., Handy, R., Palsson, O., and Boregowda, C. (2012). Axiomatic development of human psychophysiological stress indices using thermodynamics. *ARPN Journal of Engineering and Applied Sciences*, 7(6), 655-665.

(48) Handy, R., Jackson, M., Allen, C., Corson, M., Zehrung, C., and Bevil, B. (2012). Particle size distributions resulting from the combustion of common thermoplastics. *Journal of Manufacturing Technology Research*, 4(3-4), 125-132.

(49) Boregowda, S., Handy, R., Choate, R., and Boregowda, C. (2012). Entropy change index as a measure of cardio-thermal physiological stress response. *International Journal of Modern Engineering Research*, 2(2), 202-208.

(50) Boregowda, S., Choate, R., Handy, R., and Palsson, O. (2012). Thermodynamic assessment of multiple physiological stress responses using maxwell relations. *International Journal of Modern Engineering Research*, 2(2), 297-302.

(51) Handy, R., Rogers, K., Wang, J., Tumey, M., Rodriguez, D., and Hutzel, W. (2010). The characterization of aerosol particle contamination as the result of carry-over and cross-over in enthalpy wheels. *International Journal of Nanoparticles*, 3(4), 378-389.

(52) French, M., and Handy, R., Jackson, M. (2009). Manufacturing sustainability and life cycle management in the production of acoustic guitars. *International Journal of Computational Materials Science and Surface Engineering,* 2(1/2), 41-53.

(53) Rodriguez, M., Handy, R., Jackson, M., Goodman, D., and Robinson, G. (2009). Fibrous filter techniques for proper aerosol collection in surface engineering applications. *International Journal of Computational Materials Science and Surface Engineering,* 2(1/2), 155-165.

(54) Handy, R., Rodriguez, M., Whitt, M., Boregowda, S., Dues, J., and Jackson, M. (2008). The use of portable particle measurement devices to characterize airborne particles generated in various settings. *International Journal of Nanoparticles*, 1(3), 177-184.

(55) Whitt, M.D., Handy, R.G, Rodriguez, M.A., and Senarith, P. (2008). Sympathetic and cardiovagal baroreflex sensitivity as related to heat stroke. *International Journal of Nanoparticles,* 1(4), pp. 291-300.

(56) Whitt, M., Handy, R., Grow, B., and Balzer, K. (2008). Cardiovascular metrics and transepidermal water loss in a high heat risk environment. *International Journal of Nano and Biomaterials*, 1(4), 365-382.

(57) Handy, R., Whitt, M., Boregowda, S., Kraebber, H., and Bozic, C. (2008). The development of a green manufacturing skills/specialist certificate program. *Manufacturing Engineering*, 140 (6).

(58) Handy, R., Jackson, M., Rodriguez, M., Goodman, D., Robinson, G., and Lafreniere, M. (2008). An investigation of particle number and size generated during a medical drilling process with surface coated tools. *International Journal of Manufacturing Technology and Management*, 15(2), 253-263.

(59) Dues, J., Cooley, T., Ratliff, M., and Handy, R. (2008). New integrated materials and manufacturing course sequence for mechanical engineering technology. *Technology Interface*, 8(2), ISSN# 1523-9926.

(60) Boregowda, S., Handy, R., and Hutzel, W. (2007). Thermodynamic assessment of human-thermal environmental interaction. *International Journal of Design and Nature*, 2(4), 310-318.

(61) Handy, R., Goodman, D., Odukomaiya, S., Rodriguez, M., Whitfield, M., and Jackson, M. (2007). Two approaches to effective ventilation system design for the biomedical device and pharmaceutical industries. *International Journal of Nano and Biomaterials*, 1(1), 35-49.

(62) Jackson, M., French, R., Handy, R., Tomovic, M., Alcorta, E., and Gorrepati, V. (2007). Analysis and design of a high-speed projector for environmentally sustainable micro and nanoparticle deposition. *International Journal of Nanomanufacturing*, 1(5), 666-684.

(63) Goodman, C., Rodriguez, M., Handy, R., and Jackson, M. (2007). Ventilation considerations for the removal of biological nanoparticles generated during medical drilling processes. *International Journal of Manufacturing Research*, 2(2), 179-187.

(64) French, R.M, and Handy, R.G. (2007). Spectrograms - turning signals into pictures. *Journal of Engineering Technology*, 24(1), 32-35.

(65) Handy, R., French M., Corum, C., and Rodriguez, M. (2007). The near-term outsourcing of traditional BS mechanical engineering technology (MET) graduate employment in the United States. *Journal of STEM Education: Innovation and Research*, 8(1), 5-10.

(66) Handy, R., Handy, M., Rodriguez, M., Jackson, M., and Lafreniere, M. (2007). A review of environmental stressor control strategies used in micro and nanofabrication. *International Journal of Nanomanufacturing*, 1(5), 592-607.

(67) Rodriguez, M., Handy, R., Jackson, M., Robinson, G., and Goodman, D. (2007). Micro and nanoparticle monitoring during drilling operations

using continuous particle size distribution instruments. *International Journal of Nanomanufacturing*, 1(5), 657-665.

(68) Handy, R., Jackson, M., and Robinson, G., Lafreniere, M. (2006). The measurement of ultrafine particles: a pilot study using a portable particle counting technique to measure generated particles during a micromachining process. *Journal of Materials Engineering and Performance*, 15(2), 172-177.

(69) Handy, R., Handy, M., Jackson, M., and Lafreniere, M. (2006). A review of environmental stressor monitoring strategies used in micro and nanofabrication. *International Journal of Nanomanufacturing*, 1(2), 223-241.

(70) Handy, R. and Lafreniere, M. (2006). The effects of coupling motion tasks with a thermally-stressed work environment. *International Journal of Modern Engineering*, 7(1), http://www.ijme.us.

(71) French, M., Handy, R., and Cooper, H. (2006). A comparison of simultaneous and sequential single axis durability testing. *Experimental Techniques*, 30(5), 32-37.

(72) Choate, R., Handy, R., and Schmaltz, K. (2006). The application of differential pressure analysis in determining the extent of outdoor air infiltration into buildings. *International Journal of Modern Engineering*, 6(2), http://www.ijme.us.

Books and Book Chapters

(1) Jackson, M., Whitfield, M., Morrell, J., and Handy, R. (2016). Grinding technology. In H. Geng (Ed.), *Manufacturing Engineering Handbook (2nd Ed.)*. New York, NY: McGraw-Hill, pp. 29(1)-29(32).

(2) Jackson, M., Handy, R., Whitfield, M., Burgess, J., Robinson, G., and Novakov, T. (2015). Machining medical grade titanium alloys using nonabrasive nanolayered cutting tools. In M. Aliofkhazraei (Ed.), *Anti-abrasive nanocoatings*. Oxford, UK: Woodhead Publishing, pp. 225-246.

(3) Handy, R., Whitt, M., and Rodriguez, M. (2015). Environmental issues with nanoparticles. In S. Ahmed and M. Jackson (Eds.), *Emerging nanotechnologies for manufacturing*. 2nd Ed. New York, NY: Elsevier Publishers, pp. 255-268.

(4) Handy, R. (2014). *EVT 2500 Analysis of environmental pollutants: Print-based course manual*. Athens, OH: Ohio University eCampus.

(5) Handy, R. (2014). *EVT 1200 Introduction to environmental chemistry: Print-based course manual.* Athens, OH: Ohio University eCampus.

(6) Handy, R. (2014). *EVT 2100 Introduction to health physics: Print-based course manual*. Athens, OH: Ohio University eCampus.

(7) Handy, R. (2014). *EVT 2200 Fluid mechanics: Print-based course manual*. Athens, OH: Ohio University eCampus.

(8) Jackson, M., Whitfield, M., Robinson, G., Handy, R., and Morrell, J. (2013). Grinding of uranium and uranium alloys. In J. Morrell and M. Jackson (Eds.), *Uranium processing and processing*. New York, NY: Springer Publishing, pp. 95-122.

(9) Jackson, M., Robinson, G., Whitfield, M., Handy, R., and Morrell, J. (2013). Machining of uranium and uranium alloys using coated cutting tools. In J. Morrell and M. Jackson (Eds.), *Uranium processing and properties*. New York, NY: Springer Publishing, pp. 71-94.

(10) Handy, R. (2012). Environmental, health and safety in biomedical device manufacturing. In P. Davim and M. Jackson (Eds.), *Medical device manufacturing*. New York, NY: Nova Scientific Publishing, pp.47-63.

(11) Handy, R. and Bruce, R.G. (2010). Sustainable manufacturing. *Modern materials and processes.* New York, NY: Pearson Publishing, pp.189-2011.

(12) Handy, R., Whitt, M., and Rodriguez, M. (2009). Environmental issues with nanoparticles. In S. Ahmed and M. Jackson (Eds.), *Emerging nanotechnologies for manufacturing*. New York, NY: Elsevier Publishers, pp. 235-249.

(13) Jackson, M., Whitt, M., Handy, R., Robinson, G., and Whitfield, M. (2009). Commercialization of nanotechnologies: technology transfer from university research laboratories. In S. Ahmed and M. Jackson (Eds.), *Emerging nanotechnologies for manufacturing*. New York, NY: Academic Press/Elsevier Publishers, pp.252-260.

(14) Whitt, M., Handy, R., and Gosiengfiao, B. (2009). Statistical process control. In H. Bidgoli (Ed.), *The handbook of technology management*. New York, NY: Wiley Publishing, pp. 932-954.

(15) Jackson, M.J., Handy, R., Whitt, M., Whitfield, M.D., and Morrell, J.S. (2009). Analysis of machining hardened steels using coated cutting tools. In M. Jackson and J. Morrell (Eds.), *Machining with nanomaterials*. Boston, MA: Springer Verlag Publishers, pp. 259-295.

(16) Jackson, M.J., Whitfield, M.D., Morrell, J.S., Handy, R., and Whitt, M. (2009). Economic analysis of machining with nanostructured coatings. In M. Jackson and J. Morrell (Eds.), *Machining with nanomaterials*. Boston, MA: Springer Verlag Publishers, pp. 229-257.

(17) Handy, R. and Lafreniere, M. (2007). Environmental and engineering controls and monitoring in biomedical device manufacturing. In S. Ahmed and M. Jackson (Eds.), *Surface engineered surgical tools and medical devices*. Boston, MA: Springer Verlag Publishers, pp. 273-339.

(18) George, D., DiNardi, S., and Handy, R. (2003). An introduction to the design of local exhaust ventilation systems. In S. DiNardi (Ed.), *The occupational environment: Its evaluation, control, and management* (pp. 846-901). Fairfax, VA: American Industrial Hygiene Association.

(19) May, M., Handy, R., and Lafreniere, M. (1999). *Environmental regulations.* Chapel Hill, NC: University of North Carolina Occupational Health and Safety Educational Resource Center.

(20) Handy, R., and George, D. (1998). *Manual of hazardous waste operations and emergency response.* Bowling Green, KY: Western Kentucky University Department of Continuing Education.

(21) Handy, R., and LeDuc, A. (1992). *Mathematics for manufacturing.* Muncie, IN: Ball State University Department of Continuing Education.

(22) Wickman, J., and Handy, R. (1992). *Statistical process control.* Muncie, IN: Ball State University Department of Continuing Education.

Abstracts, Proceedings, Presentations, & Workshops. (Approximate Revenue: $350K)

(1) Spruit, L., Bell D., O'Flanerty K., Lombardi, D., Handy, R., Coombs, J. (2022). COVID-19 severity in people living with HIV: A pilot study in the Rocky Mountain West. *JAAPA,* Dec 1;35(12):1. Abstract

(2) Catherine, C., Henderson, S., Oldroyd, M., Sanyer, C., Elrod, L., Handy, R., and Coombs, J. (2022). Chronic care management at South Main Clinic: A retrospective perspective. *JAAPA,* Dec 1;35(12):1. Abstract

(3) Handy, R. (2022, October). *Toxicology for the Non-Toxicologist*. Professional development course presented at the 39th Annual Utah Conference on Safety and Industrial Hygiene, Salt Lake City, UT.

(4) Handy, R. and Collingwood, S. (2022, October). *Sampling Methods for the Non-Industrial Hygienist*. Professional development course presented at the 39th Annual Utah Conference on Safety and Industrial Hygiene, Salt Lake City, UT.

(5) Lillquist, D. and Handy R. (2022, October). *Ethics in Practice for the Industrial Hygiene Professional*, Special session course at the 39th Annual Utah Conference on Safety and Industrial Hygiene, Salt Lake City, UT.

(6) Collingwood, S., Handy, R., Bulbul, A., Kim, H., and Sleeth, D. (2022, September). *Environmental assessment and health protection – modern technology applied to dated tools (RERAS)*. Poster presented at International Society of Exposure Science (ISES), Lisbon, Portugal.

(7) Handy, R.G. (2022, August). *Comprehensive Review of Industrial Hygiene*. Lecture presented on *Community Exposure*, RMCOEH Continuing Education, Salt Lake City, UT.

(8) Handy, R. (2022, March). *Nebulizer-retrofitted drone deployment at residential construction sites*. Invited Webinar presentation for CPWR, Silver Springs, MD.

(9) Collingwood, S., Handy, R., Bulbul, A., Kim, H., and Sleeth, D. (2022, June). *The Design, Development, and Piloting of a Respiratory Emergency Response Alert System (RERAS) for Remote Safety Monitoring*. Military Health System Research Symposium (MHSRS), Washington, DC.

(10) Collingwood, S., Bulbul, A., Handy, R. (2020, October). *Smart Respirators Pulling Respirator Technology into the 21st Century*. Presentation (S.

Collingwood and A. Bulbul) at the 37th Annual Utah Conference on Safety and Industrial Hygiene, Salt Lake City, UT.

(11) Handy, R.G. (2019, November). *Electrical Hazards*. Lecture presented for Workplace Safety Days, University of Utah.

(12) Handy, R.G. (2019, August). *Comprehensive Review of Industrial Hygiene*. Lecture presented on *Community Exposure*, RMCOEH Continuing Education, Salt Lake City, UT.

(13) Lake, K., Sleeth, D., Handy, R., Collingwood, S., Riches, N., and Stenberg, J. (2019, May). *Characterization of Environmental Contaminants in a Frontier Community in Western Utah*. Poster session presentation at American Industrial Hygiene Conference and Exhibition (AIHce), Minneapolis, MN.

(14) Ho, A., Sleeth, D., Collingwood, S., Pahler, L., Handy, R. (2019, May). *Pre- and Post Calibration Equations of Low-Cost Sensors Using a Calibration Chamber and Reference Instrument*. Poster session presentation at American Industrial Hygiene Conference and Exhibition (AIHce), Minneapolis, MN.

(15) Handy, R.G. (2019, May). *Industrial Hygiene*. Invited lecture presented at the Utah Environmental Health Association Spring Conference 2019, Southern Utah University, Cedar City, UT.

(16) Lake, K., Sleeth, D., Handy, R., Collingwood, S., Riches, N., Stenberg, J. (2019, April). *Characterization of Environmental Contaminants in a Frontier Community in West Utah*. Poster presentation given at the 17th Annual Regional National Occupational Research Agenda (NORA) Young/New Investigators Symposium, Salt Lake City, UT.

(17) Haggerty, L., Reischl, U., Handy, R., Sleeth, D., and Adams, K. (2019, April). *The Thermodynamics of Indoor Air Pollution – A Pilot Study Emulating Traditional Kenyan Cooking Techniques*. Poster presentation given at the 17th Annual Regional National Occupational Research Agenda (NORA) Young/New Investigators Symposium, Salt Lake City, UT.

(18) Ho, A., Sleeth, D., Collingwood, S., Pahler, L., and Handy, R. (2019, April). *Pre- and Post-Calibration Equations of Low-Cost Sensors Using a Calibration Chamber and Reference Instrument*. Poster presentation given at the 17th Annual Regional National Occupational Research Agenda (NORA) Young/New Investigators Symposium, Salt Lake City, UT.

(19) Robello, R., Webb, L., Ellis, M., Handy, R., Rock, T., Schaefer, C., Sleeth, D., and Collingwood, S. (2019, April). *Descriptive Analysis of Heavy Metal Soil Presence and PM 2.5 Levels on the Wind River Reservation*. Poster presentation given at the 1st Annual Education, Research, and Community Engagement Student Poster Summit, Department of Family and Preventive Medicine, University of Utah, Salt Lake City, UT.

(20) Thomas, J., Pahler, L., Handy, R., Thiese, M., and Schaefer, C. (2019, April). *Pilot Study Predicting Body Core Temperatures in Hot Work Environments Using Thermal Imagery*. Poster presentation given at the 1st Annual Education, Research, and Community Engagement Student Poster Summit, Department of Family and Preventive Medicine, University of Utah, Salt Lake City, UT.

(21) Lake, K., Sleeth, D., Handy, R., Collingwood, S., Riches, N., Stenberg, J. (2019, April). *Characterization of Environmental Contaminants in a Frontier Community in West Utah*. Poster presentation given at the 1st Annual Education, Research, and Community Engagement Student Poster Summit, Department of Family and Preventive Medicine, University of Utah, Salt Lake City, UT.

(22) Haggerty, L., Reischl, U., Handy, R., Sleeth, D., and Adams, K. (2019, April). *The Thermodynamics of Indoor Air Pollution – A Pilot Study Emulating Traditional Kenyan Cooking Techniques*. Poster presentation given at the 1st Annual Education, Research, and Community Engagement Student Poster Summit, Department of Family and Preventive Medicine, University of Utah, Salt Lake City, UT.

(23) Ho, A., Sleeth, D., Collingwood, S., Pahler, L., and Handy, R. (2019, April). *Pre- and Post-Calibration Equations of Low-Cost Sensors Using a Calibration Chamber and Reference Instrument*. Poster presentation given at the 1st Annual Education, Research, and Community Engagement Student Poster Summit, Department of Family and Preventive Medicine, University of Utah, Salt Lake City, UT.

(24) Handy, R.G. (2109, March). *Product Stewardship and Green Manufacturing*. Invited lecture presented at the March meeting of the Utah chapter of the American Industrial Hygiene Association, Salt Lake City, UT.

(25) Whitt, M., Denton, N., Heylman, C., and Handy R. (2019, June). Lead user experiential learning – learning improvements and pathway to university, college, and community financial self-sufficiency. In Proceedings of ASEE's 126th Annual Conference & Exposition.

(26) Handy, R. and Farley, C. (2018, October). *DOT Hazardous Materials Transportation and Refresher*. Professional development course presented at the 35th Annual Utah Conference on Safety & Industrial Hygiene, Salt Lake City, UT.

(27) Riches, N., Schreiber, M., Ramsay, J. Handy, R., Sleeth, D., and Perry, K. (2018, August). *Modeling Transport of Windblown Soil Using HYSPLIT*. Poster session presentation at ISES-ISEE 2018, Ottawa, CA.

(28) Handy, R.G. (2018, August). *Comprehensive Review of Industrial Hygiene*. Lecture presented on *Community Exposure*, RMCOEH Continuing Education, Salt Lake City, UT.

(29) Mecate, D., Handy, R., Pahler, L., Sleeth, D., and Ramsay, J. (2018, May). *Temperature Inversion and Ultrafine/Near Ultrafine Particulate Matter Concentrations in the Salt Lake Valley*. Poster session presentation at American Industrial Hygiene Conference and Exhibition (AIHce), Philadelphia, PA.

(30) Cox, A., Sleeth, D., Handy, R., and Alaves, M. (2018, May). *Characterization of CO and NO_2 Exposures of Ice Skating Rink Maintenance Workers*. Poster session presentation at American Industrial Hygiene Conference and Exhibition (AIHce), Philadelphia, PA.

(31) Thomas, J., Pahler, L., Handy, R., and Thiese, M. (2018, May). *Pilot Study Predicting Body Core Temperatures in Hot Work Environments Using Thermal Imagery*. Poster session presentation at American Industrial Hygiene Conference and Exhibition (AIHce), Philadelphia, PA.

(32) Thomas, J., Pahler, L., Handy, R., and Thiese, M. (2018, April). *Pilot Study Predicting Body Core Temperatures in Hot Work Environments Using Thermal Imagery*. Presentation given at the 16th Annual Regional National Occupational Research Agenda (NORA) Young/New Investigators Symposium, Salt Lake City, UT.

(33) Cox, A., Sleeth, D., Handy, R., and Alaves, M. (2018, April). *Characterization of CO and NO_2 Exposures of Ice Skating Rink Maintenance Workers*. Presentation given at the 16th Annual Regional National Occupational Research Agenda (NORA) Young/New Investigators Symposium, Salt Lake City, UT.

(34) Cox, A., Sleeth, D., Handy, R., Thiese, M., and Lidn, G. (2018, April). *Development of an Empirical Formula for Describing Human Inhalability of Airborne Particles at Low Wind Speeds and in Calm Air*. Presentation given at the 16th Annual Regional National Occupational

Research Agenda (NORA) Young/New Investigators Symposium, Salt Lake City, UT.

(35) Mecate, D., Handy, R., Pahler, L., Sleeth, D., and Ramsay, J. (2018, April). *Temperature Inversion and Ultrafine Particulate Matter Concentrations in the Salt Lake Valley*. Presentation given at the 16th Annual Regional National Occupational Research Agenda (NORA) Young/New Investigators Symposium, Salt Lake City, UT.

(36) Robison-Hanchett, C., Pahler, L., Handy, R., and Merryweather, A. (2018, April). *Comparison of Dynamic Coefficient of Friction Between Normal and Slip-Resistant Footwear Using an Ankle/Foot Simulator Robot*. Presentation given at the 16th Annual Regional National Occupational Research Agenda (NORA) Young/New Investigators Symposium, Salt Lake City, UT.

(37) Handy, R.G. & Linville, D. (2018, March). *Industrial Hygiene Sampling*. Professional development course presented at the 38th Annual Occupational Safety & Health Winter Institute, University of North Carolina OSHERC, Tampa, FL.

(38) Handy, R.G. (2017, August). *Comprehensive Review of Industrial Hygiene*. Lecture presented on *Community Exposure*, RMCOEH Continuing Education, Salt Lake City, UT.

(39) Handy, R. (2017, June). *DOT Hazardous Materials Transportation and Refresher*. Course prepared and delivered for RMCOEH Continuing Education, Salt Lake City, UT

(40) Mecate, D., Handy, R., Pahler, L., and Sleeth, D. (2017, June). *Temperature Inversion and Ultrafine Particulate Matter Concentrations in the Salt Lake Valley*. Poster session presentation at American Industrial Hygiene Conference and Exhibition (AIHce), Seattle, WA.

(41) Thorsen, M., Handy, R., Thiese, M.., Sleeth, D., and Riches, N. (2017, June). *A Comparison Study between Previous and Current Shoreline Concentrations of Heavy Metals at the Great Salt Lake Using Portable X-ray Fluorescence*. Poster session presentation at American Industrial Hygiene Conference and Exhibition (AIHce), Seattle, WA.

(42) Clingenpeel, S., Handy, R., Pahler, L. and Sleeth, D. (2017, June). *A Comparative Evaluation of the Effectiveness of Wipe Sampling Materials to Remove Beryllium from Differently Textured Surfaces Using Zinc Oxide as a Surrogate*. Poster session presentation at American Industrial Hygiene Conference and Exhibition (AIHce), Seattle, WA.

(43) Vercellino, R., Sleeth, D., Handy, R., and Collingwood. S. (2017, June). *Laboratory Evaluation of a Low-cost, Real-time, Networked Aerosol Multi-Sensor*. Poster session presentation at American Industrial Hygiene Conference and Exhibition (AIHce), Seattle, WA.

(44) Van Orman, S., Pahler, L., Handy, R., and Sleeth, D. (2017, June). *Estimation of Body Core Temperatures in a Hot Work Environment Using Thermal Imagery*. Poster session presentation at American Industrial Hygiene Conference and Exhibition (AIHce), Seattle, WA.

(45) Fabian, R., Pahler, L., Handy, R., and Sleeth, D. (2017, June). *Evaluation of Field Extraction Compared to Lab Extraction of Isocyanate Sampling*. Poster session presentation at American Industrial Hygiene Conference and Exhibition (AIHce), Seattle, WA.

(46) Vercellino, R., Sleeth, D.K., Handy, R., Min, K., and Collingwood, S. (2017, April). *Laboratory Evaluation of a Low-cost, Real-time, Networked Aerosol Multi-Sensor*. Presentation given at the 15th Annual Regional National Occupational Research Agenda (NORA) Young/New Investigators Symposium, Salt Lake City, UT.

(47) Clingenpeel, S., Handy, R., Pahler, L., and Sleeth, D. (2017, April). *A Comparative Evaluation of the Effectiveness of Wipe Sampling Materials to Remove Beryllium from Differently Textured Surfaces*. Presentation given at the 15th Annual Regional National Occupational Research Agenda (NORA) Young/New Investigators Symposium, Salt Lake City, UT.

(48) Handy, R.G. (2017, March). *MSOH & PhD Programs in Industrial Hygiene (IH)*. Utah Chapter of the American Industrial Hygiene Association, Salt Lake City, UT.

(49) Handy, R.G. (2016, October). *Thermal Stress Monitoring and Evaluation*. Lecture presented at the 33rd Annual Utah Conference on Safety & Industrial Hygiene, Salt Lake City, UT.

(50) Handy, R.G. (2016, October). *Potential Health, Safety, and Environmental Implications of Hydraulic Fracturing or "Fracking"*. Lecture presented at the 33rd Annual Utah Conference on Safety & Industrial Hygiene, Salt Lake City, UT.

(51) Handy, R.G. (2016, August). *Comprehensive Review of Industrial Hygiene*. Lecture presented on *Community Exposure*, RMCOEH Continuing Education, Salt Lake City, UT.

(52) Handy, R.G. & Linville, D. (2016, July). *Industrial Hygiene Sampling*. Professional development course presented at the 39th Annual Occupational Safety & Health Summer Institute, University of North Carolina OSHERC, Portsmouth, VA.

(53) Holm, C., Pahler, L., Thiese, M., and Handy, R. (2016, May). *Evaluation of Physiological Strain in Hot Work Areas using Thermal Imagery*. Poster session presented at American Industrial Hygiene Conference and Exhibition (AIHce), Baltimore, MD.

(54) Stewart, J., Sleeth, D., Handy, R., Anthony, T. and Volckens, J. (2016, May). *Wind Tunnel Testing of a Disposable, Inhalable Aerosol Sampler at Two Sampling Rates*. Poster session presented at American Industrial Hygiene Conference and Exhibition (AIHce), Baltimore, MD.

(55) Holm, C., Pahler, L., Thiese, M., and Handy, R. (2016, April). *Evaluation of Physiological Strain in Hot Work Areas using Thermal Imagery*. Poster and presentation given at the 14th Annual Regional National Occupational Research Agenda (NORA) Young/New Investigators Symposium, Salt Lake City, UT.

(56) Arnold, Z., Pahler, L., Thiese, M., and Handy, R. (2016, April). *A Pilot Study Predicting Core Temperatures of Smelter Workers with Thermal Imagery and Infrared Thermometry*. Poster and presentation given at the 14th Annual Regional National Occupational Research Agenda (NORA) Young/New Investigators Symposium, Salt Lake City, UT.

(57) Shahan, A., Sleeth, D., Handy, R., and Pahler, L. (2016, April). *Comparison of a New Low-Cost Inhalable Sampler and IOM Sampler for Field Testing of Metal Refinery Workers.* Poster and presentation given at the 14th Annual Regional National Occupational Research Agenda (NORA) Young/New Investigators Symposium, Salt Lake City, UT.

(58) Hampton, M. & Handy, R. (2016, March). *40-Hour OSHA Compliance Refresher (HAZWOPER)*. Workshop presented for University of Utah ERC, Salt Lake City, UT.

(59) Pahler, L. & Handy, R. (2015, October). *Resource Conservation and Recovery Act (RCRA)*. Workshop presented for the 32nd Annual Utah Conference on Safety & Industrial Hygiene, Salt Lake City, UT.

(60) Hampton, M. & Handy, R. (2015, August). *8-Hour OSHA Compliance Refresher*. Workshop presented for University of Utah ERC, Salt Lake City, UT.

(61) Handy, R.G. (2015, March). *Potential Health, Safety, and Environmental Implications of Hydraulic Fracturing or "Fracking"*. Invited lecture presented at Western Kentucky University, Department of Public Health, Bowling Green, KY.

(62) Handy, R.G. (2014, October). *Introduction to HVAC Design*. Professional development course presented at UNC Charlotte Center City Campus, Charlotte, NC.

(63) Handy, R.G. & Linville, D. (2014, August). *Industrial Hygiene Sampling*. Professional development course presented at the 37th Annual Occupational Safety & Health Summer Institute, University of North Carolina OSHERC, Portsmouth, VA.

(64) Handy, R.G. & Linville, D. (2013, July). *Industrial Hygiene Sampling*. Professional development course presented at the 36th Annual Occupational Safety & Health Summer Institute, University of North Carolina OSHERC, Norfolk, VA.

(65) Handy, R.G. & Linville, D. (2012, July). *Industrial Hygiene Sampling*. Professional development course presented at the 35th Annual Occupational Safety & Health Summer Institute, University of North Carolina OSHERC, Norfolk, VA.

(66) Rodgers, K., Hutzel, W., Dana, M. and Handy, R. (2012, May). *Can plants save money: a look at the biowall*. Paper presented at the International High Performance Buildings Conference, Purdue University, West Lafayette, IN.

(67) Lafreniere, M., and Handy, R.G. (2011, October). *Designing and implementing a collaboratory for STEM education*. Lecture-demonstration at the STEMtech Conference, Indianapolis, IN.

(68) Handy, R.G. & Linville, D. (2011, July). *Industrial Hygiene Sampling*. Professional development course presented at the 34th Annual Occupational Safety & Health Summer Institute, University of North Carolina OSHERC, Norfolk, VA.

(69) Reed, A.S., Fowler, L.M., Lechtenberg, V.L., and Handy, R. (2008, November). Green jobs and the university role. In D.R. Campion (Chair), *Council on engagement and outreach*. Symposium conducted at the NASULGC 121st Annual Meeting: Navigating in a Climate of Change, Chicago, IL.

(70) Wey, A., Handy, R., Zheng, Y., and Kim, C. (2007, October). IR-excited fuel for improved engine efficiency. In B. Verdegan (Chair), *Engine fuel*

filtration. Symposium conducted at the 3rd AFS Conference: Emissions Solutions in Transportation, Ann Arbor, MI.

(71) Handy, R.G. (2007, October). *First Responder – Operations Level*. Workshop presented at Ohio University's Environmental Training and Research Center (ETRC) for Kenworth Automotive, Chillicothe, OH.

(72) Handy, R.G. (2007, September). *First Responder – Operations Level*. Workshop presented at Ohio University's Environmental Training and Research Center (ETRC) for Kenworth Automotive, Chillicothe, OH.

(73) Whitt, M., Ratcliffe, M., and Handy, R. (2006). Engineering technology students: their role in the global economy. In Proceedings of the 2006 American Society for Engineering Education Annual Conference and Exposition.

(74) Handy, R., Whitt, M., and Lafreniere, M. (2006). The introduction of environmental and industrial health and safety issues and emerging technologies in a beginning manufacturing processes course. In Proceedings of the 2006 American Society for Engineering Education Annual Conference and Exposition.

(75) Handy, R., Jackson, M., Rodriguez, M., Goodman, D., Robinson, G., and Lafreniere, M. (2006). The characterization of particles generated and removed during a bone drilling process with surface coated tools. In Proceedings 5th International Surface Engineering Congress, pp 47-52. Seattle, WA:ASM International.

(76) Handy, R., Jackson, M., Goodman, D., Rodriguez, M., and Robinson, G. (2006). Local exhaust/dilution ventilation considerations for biological nanoparticle exhaust during medical drilling operations. In Proceedings 5th International Surface Engineering Congress, pp 53-56. Seattle, WA:ASM International.

(77) Rodriguez, M., Handy, R., Jackson, M., Robinson, G., and Goodman, D. (2006). A review of available fibrous filter technology for use in aerosol deposition and removal in surface engineering applications. In Proceedings 5th International Surface Engineering Congress, pp 57-62. Seattle, WA:ASM International.

(78) Goodman, D., Handy, R., Jackson, M., Leong, K, Bozell, B., and Zajac, P. (2006). Nanoparticle concentration sensor concept. In Proceedings 5th International Surface Engineering Congress, pp 73-77. Seattle, WA:ASM International.

(79) Jackson, M., Gorrepati, V., Alcorta, E., French, M., and Handy, R. (2006). Fluid dynamic analysis of a high speed projector for environmentally sustainable impact machining operations. In Proceedings of the 5th International Surface Engineering Congress, pp 160-164. Seattle, WA:ASM International.

(80) Handy, R.G. (2006, August). *First Responder – Operations Level*. Workshop presented at Ohio University's Environmental Training and Research Center (ETRC) for DuPont Chemical, Inc., Chillicothe, OH.

(81) Handy, R.G. & Harris, K.S. (2006, July). *Environmental Regulations for Occupational Health and Safety Professionals*. Professional development course presented at the 29th Annual Occupational Safety & Health Summer Institute, University of North Carolina OSHERC, Marco Island, FL.

(82) Handy, R., Jackson, M., Robinson, G., and Lafreniere, M. (2005). The measurement of ultrafine particles created during a surface micromachining process using a portable particle counting technique. In Proceedings of the International Surface Engineering Congress & Exhibition 2005, ISEC13-7830. Minneapolis, MN: ISEC.

(83) Handy, R., Jackson, M., Robinson, G., and Lafreniere, M. (2005). A review of viable monitoring techniques for nanoparticle exposure assessment. In Proceedings of the International Surface Engineering Congress & Exhibition 2005, ISEC13-7832. Minneapolis, MN: ISEC.

(84) Handy, R., French, M., and Jackson, M.J. (2005). Introducing environmental sustainability in a manufacturing processes course. In Proceedings of the 35th ASEE/IEEE Frontiers in Education Conference [CD ROM], S1D7 – S1D9. Indianapolis, IN: ASSE/IEEE.

(85) Handy, R.G. & May, M.T. (2005, August). *Environmental Regulations for Occupational Health and Safety Professionals*. Professional development course presented at the 28th Annual Occupational Safety & Health Summer Institute, University of North Carolina OSHERC, Marco Island, FL.

(86) Whitt, M., and Handy, R. (2005, November). Engaging engineering technology students in heat stress related research: medical device design and development. Paper presented at *Advancing Innovations in Engineering Technology Education*, San Diego, CA.

(87) Handy, R.G. (2005, April) *First Responder – Operations Level*. Workshop presented for Adams County Ohio Emergency Planning Commission, Adams County, OH.

(88) Handy, R.G. (2005, April) *First Responder – Operations Level*. Workshop presented for Jackson County Ohio Emergency Planning Commission, Jackson County, OH.

(89) Handy, R.G. & Lafreniere, M.D. (2005, February). *8-Hour OSHA Compliance Refresher*. Workshop presented for Trogden Environmental, Inc., Jasper, IN.

(90) Handy, R.G. & May, M.T. (2004, August). *Environmental Regulations for Occupational Health and Safety Professionals*. Professional development course presented at the 27th Annual Occupational Safety & Health Summer Institute, University of North Carolina OSHERC, Norfolk, VA.

(91) Handy, R.G. & Lafreniere, M.D. (2004, March). *8-Hour OSHA Compliance Refresher*. Workshop presented for Siemer Milling, Hopkinsville, KY.

(92) Lafreniere, M.D. & Handy, R.G. (2004, January). *DOT Hazardous Materials Transportation Refresher*. Workshop presented for General Motors-Corvette Plant, Bowling Green, KY.

(93) Cummins, J., and Handy, R. (2003, November). Analysis of soil lead levels in historic districts of south central city. Poster session presented at the *American Public Health Association's 131st Annual Meeting and Exposition*, San Francisco, CA.

(94) Gardner, M., Higgins, W., Wainwright, C., Handy, R., and Brown, L. (2003, November). Emergency medical services preparedness for weapons of mass destruction. Paper presented at *the American Public Health Association's 131st Annual Meeting and Exposition*, San Francisco, CA.

(95) Lafreniere, M.D. & Handy, R.G. (2003, September). *DOT HazMat Transportation Refresher*. Workshop presented for General Motors-Corvette Plant, Bowling Green, KY.

(96) Lafreniere, M.D. & Handy, R.G. (2003, August). *DOT HazMat Transportation Refresher*. Workshop presented for General Motors-Corvette Plant, Bowling Green, KY.

(97) Handy, R.G. & May, M.T. (2003, August). *Environmental Regulations for Occupational Health and Safety Professionals*. Professional development course presented at the 26th Annual Occupational Safety & Health Summer Institute, University of North Carolina OSHERC, Norfolk, VA.

(98) Handy, R.G. & Lafreniere, M.D. (2003, July). *40-Hr OSHA Compliance (HAZWOPER)*. Workshop presented for The Children's Hospital of Atlanta, Bowling Green, KY.

(99) Handy, R.G. & Lafreniere, M.D. (2003, May). *8-Hour OSHA Compliance Refresher*. Workshop presented for Western Kentucky University's Department of Continuing Education, Bowling Green, KY.

(100) Handy, R.G. & Lafreniere, M.D. (2002, December). *40-Hr OSHA Compliance (HAZWOPER)*. Workshop presented for Hinkle Construction, Inc., Lexington, KY.

(101) George, D., and Handy, R. (2002). Project-based learning in occupational safety and health. In Proceedings of the NIOSH 6th International Conference Scientific Committee on Education and Training in Occupational Health (pp. 217-221). Cincinnati, OH: National Institute of Occupational Safety & Health.

(102) Handy, R.G. & Lafreniere, M.D. (2002, May). *8-Hour OSHA Compliance Refresher*. Workshop presented for Western Kentucky University's Department of Continuing Education, Bowling Green, KY.

(103) Handy, R.G. & Lafreniere, M.D. (2002, May). *Industrial Environmental Management*. Professional development course presented at The Kentucky Governor's Safety & Health Conference and Exhibition, Louisville, KY.

(104) Handy, R.G. & Lafreniere, M.D. (2002, January). *8-Hour OSHA Compliance Refresher*. Workshop presented for Siemer Milling, Hopkinsville, KY.

(105) Handy, R.G. & Lafreniere, M.D. (2002, January). *8-Hour OSHA Compliance Refresher*. Workshop presented for SR of Kentucky, Bowling Green, KY.

(106) Handy, R.G., May, M.T., & Lafreniere, M.D. (2002, January). *Environmental Regulations for Occupational Health and Safety Professionals*. Professional development course presented at the 22nd Annual Occupational Safety & Health Winter Institute, University of North Carolina OSHERC, Daytona, FL.

(107) Handy, R.G., May, M.T. & Lafreniere, M.D. (2001, August). *Environmental Regulations for Occupational Health and Safety Professionals*. Professional development course presented at the 24th Annual Occupational Safety & Health Summer Institute, University of North Carolina OSHERC, Norfolk, VA

(108) Lafreniere, M., and Handy, R. (2001, July). The use of digital multimedia in industrial hygiene practice. Paper presented at the *Annual Environmental Health and Safety Conference and Exposition*, New Orleans, LA.

(109) Handy, R., and Lafreniere, M. (2001, July). Difficulties encountered in sampling and correlation of health effects from biologically derived airborne contaminants. Paper presented at the *Annual Environmental Health and Safety Conference and Exposition*, New Orleans, LA.

(110) Handy, R.G. & Lafreniere, M.D. (2001, May). *8-Hour OSHA Compliance Refresher*. Workshop presented for Western Kentucky University's Department of Continuing Education, Bowling Green, KY.

(111) Handy, R.G. & Lafreniere, M.D. (2001, May). *Indoor Air Quality Measurement and Evaluation*. Professional development course presented at The Kentucky Governor's Safety & Health Conference and Exhibition, Louisville, KY.

(112) Handy, R., and May, M. (2001). *Fundamentals of environmental health.* Chapel Hill, NC: University of North Carolina Occupational Health and Safety Educational Resource Center.

(113) George, D., and Handy, R. (2000, October). Industrial partnerships for industrial hygiene curricula: A necessity, not a luxury. Paper presented at the *ABET 2000 Annual Meeting*, Atlanta, GA.

(114) Handy, R.G., May, M.T. & Lafreniere, M.D. (2000, August). *Environmental Regulations for Occupational Health and Safety Professionals*. Professional development course presented at the 23rd Annual Occupational Safety & Health Summer Institute, University of North Carolina OSHERC, Norfolk, VA.

(115) Handy, R.G. & Lafreniere, M.D. (2000, May). *Indoor Air Quality Measurement and Evaluation*. Professional development course presented at The Kentucky Governor's Safety & Health Conference and Exhibition, Louisville, KY.

(116) Handy, R.G. & Lafreniere, M.D. (2000, May). *8-Hour OSHA Compliance Refresher*. Workshop presented for Western Kentucky University's Department of Continuing Education, Bowling Green, KY.

(117) Handy, R., and Lafreniere, M. (1999). Automated sampling and characterization using an integrated systems approach. In Proceedings of Waste Management Symposium, [CD ROM], 23-10-1 – 23-10-13. Tucson, AZ: Laser Options.

(118) George, D., Russell, J., and Handy, R. (1999). The industrial hygiene program at WKU. In J. Nelson (Ed.), In Proceedings of the 1999 ASEE Southeastern Educational Conference [CD ROM], 5-1-1 – 5-1-10. Washington, DC: American Society of Engineering Education.

(119) Lafreniere, M., and Handy, R. (1999). An automated system for indoor air quality monitoring. In Proceedings of the First NSF International Conference on Indoor Air Health (pp. 204-210). Ann, Arbor, MI: NSF International.

(120) Lafreniere, M.D. & Handy, R.G. (1999, August). *8-Hour OSHA Compliance Refresher*. Workshop presented for YSK Corporation, Marietta, OH.

(121) Handy, R.G. & Lafreniere, M.D. (1999, August). *Confined Space Entry Refresher*. Workshop presented for DESA International, Inc., Bowling Green, KY.

(122) Handy, R.G., May, M.T. & Lafreniere, M.D. (1999, August). *Environmental Regulations for Occupational Health and Safety Professionals*. Professional development course presented at the 22nd Annual Occupational Safety & Health Summer Institute, University of North Carolina OSHERC, Williamsburg, VA.

(123) Lafreniere, M.D. & Handy, R.G. (1999, July). *8-Hour OSHA Compliance Refresher*. Workshop presented for Ohio Precious Metals, Inc, Jackson, OH.

(124) Lafreniere, M.D. & Handy, R.G. (1999, June). *16-Hour C**o**nfined Space Entry*. Workshop presented at Ohio University's Environmental Training and Research Center (ETRC), Chillicothe, OH.

(125) Handy, R.G. (1999, June). *First Responder – Awareness Level*. Workshop presented for DANA Corporation, Franklin, KY.

(126) Handy, R.G. & Lafreniere, M.D. (1999, May). *8-Hour OSHA Compliance Refresher*. Workshop presented for Paxton & Ball Environmental, Inc. and ECM, Inc., Dundee, KY.

(127) Handy, R.G. & Lafreniere, M.D. (1999, May). *8-Hour OSHA Compliance Refresher*. Workshop present ed for Western Kentucky University's Department of Continuing Education, Bowling Green, KY.

(128) Handy, R.G. & Lafreniere, M.D. (1999, May). *Indoor Air Quality Measurement and Evaluation*. Professional development course

presented at The Kentucky Governor's Safety & Health Conference and Exhibition, Louisville, KY.

(129) Lafreniere, M.D. & Handy, R.G. (1999, March). *16-Hour Confined Space Entry*. Workshop presented for TPM Environmental, Inc, Bowling Green, KY.

(130) Handy, R.G., May, M.T., & Lafreniere, M.D. (1999, January). *Environmental Regulations for Occupational Health and Safety Professionals*. Professional development course presented at the 19th Annual Occupational Safety & Health Winter Institute, University of North Carolina OSHERC, St. Petersburg, FL.

(131) Handy, R.G. & Lafreniere, M.D. (1998, November). *8-Hour OSHA Compliance Refresher*. Workshop presented for TPM Environmental, Inc. Bowling Green, KY.

(132) Handy, R.G. & Lafreniere, M.D. (1998, October). *8-Hour OSHA Compliance Refresher*. Workshop presented for Uticon, Inc., Morgantown, KY.

(133) Handy, R.G. (1998, October). *Title V Air Permitting*. Workshop presented for Western Kentucky University's Department of Environmental Health and Safety, Bowling Green, KY.

(134) Handy, R.G., May, M.T. & Lafreniere, M.D. (1998, July). *Environmental Regulations for Occupational Health and Safety Professionals*. Professional development course presented at the 21st Annual Occupational Safety & Health Summer Institute, Univ. of North Carolina OSHERC, Norfolk, VA.

(135) Lafreniere, M.D. & Handy, R.G. (1998, July). *16-Hour Confined Space Entry*. Workshop presented at Ohio University's Environmental Training and Research Center (ETRC), Chillicothe, OH.

(136) Handy, R.G. & Lafreniere, M.D. (1998, May). *40-Hr OSHA Compliance (HAZWOPER)*. Workshop presented for the Environmental Health and Safety Resource Center at Western Kentucky University, Bowling Green, KY.

(137) Handy, R.G. & Lafreniere, M.D. (1998, May). *8-Hour OSHA Compliance Refresher*. Workshop presented for the Environmental Health and Safety Resource Center at Western Kentucky University, Bowling Green, KY.

(138) Handy, R.G. & Lafreniere, M.D. (1998, April). *Automated Environmental Instrumentation*. Professional development course presented at The

Kentucky Governor's Safety & Health Conference and Exhibition, Louisville, KY.

(139) Handy, R., and Lafreniere, M. (1998). An automated survey method for site air pollutant characterization. In Proceedings of The International Symposium on the Measurement of Toxic and Related Air Pollutants (pp. 123-127). Pittsburg, PA: Air and Waste Management Association.

(140) Handy, R.G., May, M.T., & Lafreniere, M.D. (1998, January). *Environmental Regulations for Occupational Health and Safety Professionals*. Professional development course presented at the 18th Annual Occupational Safety & Health Winter Institute, University of North Carolina OSHERC, St. Petersburg, FL.

(141) Handy, R.G. (1998, January). *8-Hour OSHA Compliance Refresher*. Workshop presented for ATC Associates, Louisville, KY.

(142) Handy, R.G., May, M.T. & Lafreniere, M.D. (1997, August). *Environmental Regulations for Occupational Health and Safety Professionals*. Professional development course presented at the 20th Annual Occupational Safety & Health Summer Institute, Univ. of North Carolina OSHERC, Norfolk, VA.

(143) Handy, R.G. (1997, July). *Fundamentals of Industrial Hygiene*. UNET Workshop presented for Texas Gas, Inc., Owensboro, KY.

(144) Handy, R.G. (1997, July). *Science for the Non-Scientist*. UNET Workshop presented for Texas Gas, Inc., Owensboro, KY.

(145) Handy, R.G. & Lafreniere, M.D. (1997, May). *40-Hr OSHA Compliance (HAZWOPER)*. Workshop presented for the Environmental Health and Safety Resource Center at Western Kentucky University, Bowling Green, KY.

(146) Handy, R.G. & Lafreniere, M.D. (1997, May). *8-Hour OSHA Compliance Refresher*. Workshop presented for the Environmental Health and Safety Resource Center at Western Kentucky University, Bowling Green, KY.

(147) Handy, R.G. (1997, April). *The RAC-ABET Accredited Industrial Hygiene Program at WKU*. Presentation for the South Central Kentucky Environmental Managers (SCKEM), The Plaza Hotel, Bowling Green, KY.

(148) Handy, R.G. (1997, April). *Automated Environmental Instrumentation*. Professional development course presented at The Kentucky Governor's Safety & Health Conference and Exhibition, Louisville, KY.

(149) Lafreniere, M.D. & Handy, R.G. (1997, March). *8-Hour OSHA Compliance Refresher*. Workshop presented for Ohio University's Environmental Training and Research Center (ETRC), Chillicothe, OH.

(150) Handy, R.G. (1997, January). *Certified Hazardous Materials Manager (CHMM) Review Course: Clean Water Act*. Professional development course prepared for the Navy Institute on Occupational Health and Safety, Virginia Beach, VA.

(151) Handy, R.G. (1996, May). *40-Hr OSHA Compliance (HAZWOPER)*. Workshop presented for Old Dominion's Department of Environmental Health, Norfolk, VA.

(152) Harder, G., Bolch, W., and Handy, R. (1995). Increasing quality assurance through an integrated survey system. In *Proceedings of the Waste Management Symposium*, [CD ROM], 27-56-1 – 27-56-8. Tucson, AZ: Laser Options.

(153) Handy, R., and Lafreniere, M. (1995, May). An automated environmental characterization system for indoor surveys. Poster session presented at the *AIHA Annual Conference and Exposition*, Kansas City, KS.

(154) Handy, R., Bolch, W., Lafreniere, M., Thompson, J., and Smith, M. (1995). An indoor radiological characterization survey using automated positioning. In Proceedings of Waste Management Symposium, [CD ROM], 27-17-1 – 27-17-10. Tucson, AZ: Laser Options.

(155) Handy, R., and Bolch, E. (1994). An automated radiological survey method for performing site remediation and decommissioning. In Proceedings of the Waste Management Symposium, (pp. 228-232). Tucson, AZ: Laser Options.

(156) Brunner, W. & Handy, R.G. (1994, September). *40-Hr OSHA Compliance (HAZWOPER)*. Workshop presented for Ohio University's Department of Hazardous Materials Technology, Chillicothe, OH.

(157) Handy, R.G., and Bolch, W.E. (1992, February). An automated environmental monitoring and assessment system for indoor remediation projects. Poster session for the *Health Physics Society Mid-Year Annual Meeting*, Albany, NY.

Grants and Awards (Approximate Total Awarded: $15 million – 10% effort average)

1) NIEHS – RISE R25, *Training in Performance-Based Approaches and Multi-Layered Measurement Strategies (PALMS) for Enhanced Indoor Air Quality Management* (pending)
   Duration of funding: 7/23 – 6/28
   Total amount of funding: $995,000
   Role: Subcontract PI

2) NIOSH – CDC R21, *Drone Deployment at Construction Sites: A Misting Strategy to Reduce Worker Heat Stress and Dust Exposures* (pending)
   Duration of funding: 7/23 – 6/25
   Total amount of funding: $275,000
   Role: Principal Investigator

3) OSHA – USDOL Susan Harwood Training Grants, *An Interactive Safety Training Platform for Welding, Cutting, and Brazing Health Hazards in the Construction Industry* (pending)
   Duration of funding: 5/23 – 4/24
   Total amount of funding: $75,000
   Role: Co-Principal Investigator

4) University of Utah SOM, *Teaching Technology Funds - Open Range Software for IH Lab Data Management Applications*
   Duration of funding: 8/21-7/24
   Total amount of funding: $10,500
   Role: Co-Principal Investigator

5) NIOSH-CDC, *Incorporating Worksite Interventions in Safety and Health (IWISH): Building Capacity for Total Worker Health*
   Duration of funding: 9/21 – 8/24
   Total amount of funding: $1,481,427
   Role: Co-Investigator

6) NIH-NIEHS R25, *Biological Hazard Site Training in Emerging Technology (BioSTET) for Health and Safety*
   Duration of funding: 9/21 – 8/26
   Total amount of funding: $1,126,841
   Role: Co-Principal Investigator

7) Utah Division of Air Quality
   USEPA Community-Scale Air Toxics Ambient Monitoring Grant, *Ambient Monitoring and Health Risk Assessment of Ethylene Oxide Emissions from Major Commercial Sterilizers in Utah*
   Duration of funding: 5/21-4/23
   Total amount of funding: $364,954 Role: Subcontract PI

8) Health Resources and Service Administration (HRSA), *PA Primary Care Training for Substance Abuse and Mental Health*
Duration of funding: 9/19 – 8/24
Total amount of funding: $1,486,271
Role: Co-Investigator

9) University of Utah: Emerging COVID-19/SARS CoV-2 Research *Healthcare workers' exposures to SARS-CoV-2 and effectiveness of exposure controls*
Duration of funding: 4/20 – 3/21
Total amount of funding: $25,000
Role: Co-Investigator

10) University of Utah Special Emphasis: Emerging COVID-19/SARS CoV-2 Research *Performance Testing of Alternative Respiratory Protection during a Pandemic*
Duration of funding: 4/20 – 3/21
Total amount of funding: $25,000
Role: Co-Investigator

11) DFPM Health Studies Fund, *The Design and Development of a Retrofitted for Respirator Emergency Alert System (RERAS)*
Duration of funding: 4/20-3/21
Total amount of funding: $7,800
Role: Co-Investigator

12) NIH (R01) *Mechanisms Linking Daily Psychological and Environmental Stress to Sleep Deficiencies Among African Americans* (under review)
Duration of funding: 1/22-12/25
Total amount of funding: 1,850,000
Role: Co-Investigator

13) CPWR, *Nebulizer-Retrofitted Drone Deployment at Residential Construction Sites*
Duration of funding: 6/20 – 5/21
Total amount of funding: $30,000
Role: Principal Investigator

14) DFPM Health Studies Fund, *A Comparison of Perceived Competencies between Hurricane, Utah's Local Emergency Planning Committee (LEPC) and Zion National Park (ZNP) First Responders*
Duration of funding: 1/20-12/20
Total amount of funding: $7,000
Role: Mentor

15) DFPM Health Studies Fund, *A Comparison of Heat Stress Conditions Based on Kitchen Configurations in the Full Service Restaurant Industry*
Duration of funding: 4/19-3/20
Total amount of funding: $5,000
Role: Principle Investigator

16) NIEHS R21, *Environmental Exposures of the Northern Arapaho Tribe: An Exploratory Study*
Duration of funding: 7/21 – 6/23
Total amount of funding: $423,244
Role: Co-Investigator

17) High Plains Intermountain Center for Agricultural Health & Safety (HICAHS) - CSU, *Potential Total Petroleum Hydrocarbon Exposures in Native American Communities along the Missouri River*
Duration of funding: 1/19 – 12/19
Total amount of funding: $25,000 Role: Co-PI

18) NIOSH-OSHERC Training Grant 2T42/OH008414
Duration of funding: 7/15 – 6/23
Total amount of funding: $8,430,000
Role: Co-Investigator and Director of IH (2/16 – 6/19)

19) SHTG-FY-17-01 USDOL Susan Harwood Training Grants, *Hazardous Materials Handling and Injury Prevention for Oil and Gas Workers*
Duration of funding: 7/17-6/18
Total amount of funding: $148,820
Role: Principal Investigator

20) DFPM Health Studies Fund, *The Assessment of Goshute Tribe Community Exposures to Environmental Contaminants*
Duration of funding: 11/17-6/18
Total amount of funding: $3,900
Role: Principal Investigator

21) DFPM Health Studies Fund, *Temperature Inversion and Ultrafine Particle Matter Concentrations in the Salt Lake Valley*
Duration of funding: 11/16-10/17
Total amount of funding: $5,000
Role: Principle Investigator

22) USPCAS-W Course Mentoring Program, *Occupational Health and Safety Course Development at MUET*
Duration of funding: 8/16-12/17
Total amount of funding: $7,640
Role: Project personnel

23) PAR-15-303 NIOSH-OSHERC (T42), *Targeted Research Training (TRT)*
Duration of funding: 7/16-6/18
Total amount of funding: $605,000
Role: Program Director and Co-PI

24) PPRT NIOSH, *Evaluation of Wipes for Removing Beryllium from Surfaces of Different Textures*
Duration of funding: 7/16-6/17
Total amount of funding: $4,480
Role: Mentor

25) PPRT NIOSH, *The Development of an Airborne Contaminant Exposure Model at the Great Salt Lake Based Upon Environmental Sampling of by Portable XRF*
Duration of funding: 7/16-6/17
Total amount of funding: $4,390
Role: Mentor

26) DFPM Health Studies Fund, *The Development of a Predictive Algorithm for Individualistic Heat Stress Characterization and Assessment*
Duration of funding: 8/15-7/16
Total amount of funding: $5,000
Role: Principle Investigator

27) ASHRAE Senior Undergraduate Project Grant, *Solar Ejector Refrigeration System*
Duration of funding: 8/15-5/16
Total amount of funding: $5,000
Role: Co-Principal Investigator

28) Parker Hannifin Corporation, *Mechanical Device Pump Analysis*
Duration of funding: 1/15-9/15
Total amount of funding: $33,000
Role: Co-Principal Investigator

29) U.S. Department of Energy, *Residual Stress Characterization of Metals and Alloys During Machining Processes*
Duration of funding: 3/13-12/14
Total amount of funding: $100,000
Role: Principal Investigator

30) U.S. Department of Energy, *Acoustic Emission Detection of Metals and Alloys During Machining Processes*
Duration of funding: 8/11-12/11
Total amount of funding: $120,000
Role: Principal Investigator

31) ALCOA, Inc, *Development of a Sustainable Manufacturing Portal: Phase II*
Duration of funding: 7/11-6/12
Total amount of funding: $48,070
Role: Principal Investigator

32) ALCOA, Inc, *Development of a Sustainable Manufacturing Portal: Phase I*
Duration of funding: 6/10-5/11
Total amount of funding: $49,000
Role: Principal Investigator

33) Odorox Environmental LLC, *The Characterization of Bioaerosol and Surface Contamination Before/After the Operation of a Hydroxyl Generating Air Cleaner*
Duration of funding: 1/10-6/10
Total amount of award: $10,000
Role: Principal Investigator

34) U.S. Department of Labor (Purdue TAP), *Green Product Design Modules*
Duration of funding: 5/09-8/09
Total amount of award: $40,000
Role: Principal Investigator

35) U.S. Department of Labor (WIRED) Grant, *Green Workforce Development*
Duration of funding: 1/08-8/09
Total amount of award: $514,807
Role: Co-Principal Investigator

36) Purdue Technical Assistance Program (TAP), *Green Workforce Development*
Duration of funding: 8/07 – 12/07
Total amount of award: $30,000
Role: Project Personnel

37) Luvata Copper-Franklin, *Air Sampling Post Corrective Action*
Duration of funding: 7/1/07-8/31/07
Total amount of award: $3,500
Role: Principal Investigator

38) Luvata Copper-Franklin, *Follow-up Air Sampling Survey with Noise Dosimetry*
Duration of funding: 5/1/07-6/30/07
Total amount of award: $6,049 Role: Principal Investigator

39) Ford Research Fund, *Engine Test Stand*
Duration of funding: 8/06 – 12/06
Total amount of award: $12,000
Role: Project Personnel

40) Ford Research Fund, *Portable XRF Metal Analyzer*
Duration of funding: 8/06 – 12/06
Total amount of award: $27,000
Role: Project Personnel

41) CIM in Higher Ed Alliance, *Development of a "Sustainability in Manufacturing" Course*
Duration of funding: 7/1/07 – 7/31/07
Total amount of award: $9,091
Role: Principal Investigator

42) SME Manufacturing Engineering Ed Foundation, *Curriculum Modules in PLM for Engineering/Technology Students & Industrial Practitioners*
Duration of funding: 10/1/05 – 9/30/07
Total amount of award: $274,000 Role: Co-Principal Investigator

43) Ford Research Fund, *Materials Selector software*
Duration of funding: 8/05 – 12/05
Total amount of award: $55,000
Role: Project Personnel

44) ALDI/The Gilliam Group, *Investigation of FIR Device*
Duration of funding: 8/31/06 – 2/28/07
Total amount of award: $30,000
Role: Principal Investigator

45) Steel Parts Corporation, *Environmental Assessment ISO 14001 Audit*
Duration of funding: 4/1/06 – 4/30/06
Total amount of award: $1,319
Role: Principal Investigator

46) Outokumpu Copper-Franklin, *On-Site Air Sampling*
Duration of funding: 8/1/05 – 7/31/06
Total amount of award: $4,500
Role: Principal Investigator

47) DESA International, *EH&S Safety Program Review*
Duration of funding: 4/04-5/04
Total amount of award: $1,573
Role: Principal Investigator

48) S-R of Kentucky, *HEAT Unit Services and Certification*
Duration of funding: 12/03-1/04
Total amount of award: $978
Role: Principal Investigator

49) Pride Plastics, *Environmental Monitoring*
Duration of funding: 10/03-12/03
Total amount of award: $1,490
Role: Principal Investigator

50) City of Bowling Green, *HEAT Unit Services*
Duration of funding: 9/03-10/03
Total amount of award: $978
Role: Principal Investigator

51) SCA Hygiene Products, *Humidity Control Analysis*
Duration of funding: 9/03-12/03
Total amount of award: $3,163
Role: Principal Investigator

52) Valspar Industries, *HEAT Unit Services*
Duration of funding: 9/03-10/03
Total amount of award: $978
Role: Principal Investigator

53) Harman-Becker Automotive Systems, *Respirator Fit Testing*
Duration of funding: 8/03-10/03
Total amount of award: $810
Role: Principal Investigator

54) Weyerhauser-Kentucky Mills, *Indoor Air Quality Assessment II*
Duration of funding: 8/03-10/03
Total amount of award: $713
Role: Principal Investigator

55) Children's Health Care of Atlanta, *HAZWOPER*
Duration of funding: 6/03-7/03
Total amount of award: $6,711
Role: Principal Investigator

56) Weyerhauser-Kentucky Mills, *Indoor Air Quality Assessment I*
Duration of funding: 4/03-5/03
Total amount of award: $713
Role: Principal Investigator

57) Federal Mogul, *HEAT Mobile Unit Services*
Duration of funding: 3/03-4/03
Total amount of award: $977
Role: Principal Investigator

58) DESA International, *Lock-Out/Tag-Out*
Duration of funding: 2/03-3/03
Total amount of award: $980
Role: Principal Investigator

59) DESA International, *EH&S Programs Review*
Duration of funding: 2/03-5/03
Total amount of award: $1,974
Role: Principal Investigator

60) Seimer Milling, Inc., *HEAT Mobile Unit Services and Certification*
Duration of funding: 1/03-2/03
Total amount of award: $977
Role: Principal Investigator

61) S-R of Kentucky, *HEAT Mobile Unit Services and Certification*
Duration of funding: 1/03-2/03
Total amount of award: $977
Role: Principal Investigator

62) S-R of Kentucky, *Fume Hood Testing*
Duration of funding: 1/03-3/03
Total amount of award: $1,199
Role: Principal Investigator

63) Weyerhauser-Kentucky Mills, *Asbestos Sampling and Reporting*
Duration of funding: 1/03-3/03
Total amount of award: $1,485
Role: Principal Investigator

64) Ohio University ETRC, *HEAT Mobile Unit Services*
Duration of funding: 12/02-1/03
Total amount of award: $2,142
Role: Principal Investigator

65) ZUA Autoparts, Inc., *Lead Analysis and Summary of Findings*
Duration of funding: 12/02-1/03
Total amount of award: $590
Role: Principal Investigator

66) Willamette Industries, Inc., *Air Monitoring*
Duration of funding: 9/02-11/02
Total amount of award: $3,992
Role: Principal Investigator

67) Pan-Oston Company, *Sampling for Welding Fumes*
Duration of funding: 9/02-11/02
Total amount of award: $615
Role: Principal Investigator

68) Valspar Corporation, *HAZWOPER Training with Certification*
Duration of funding: 8/02-9/02
Total amount of award: $1,900
Role: Principal Investigator

69) Curry Timber, *Noise Dosimetry*
Duration of funding: 7/02-8/02
Total amount of award: $1,470
Role: Principal Investigator

70) DESA International, *Environmental Health and Safety Program Review*
Duration of funding: 5/02-8/02
Total amount of award: $1,953
Role: Principal Investigator

71) Weyerhauser, Inc., *Noise Survey*
Duration of funding: 5/02-7/02
Total amount of award: $2,495
Role: Principal Investigator

72) Barren County School System, *Qualitative IAQ Survey*
Duration of funding: 3/02-5/02
Total amount of award: $2,984
Role: Principal Investigator

73) Willamette Industries, Inc., *Welding Fume Profile*
Duration of funding: 2/02-5/02
Total amount of award: $6,433
Role: Principal Investigator

74) DESA International, *Environmental Health and Safety Programs Review*
Duration of funding: 1/02-4/02
Total amount of award: $1,953
Role: Principal Investigator

75) Brownyard Claims Management, *Air and Swipe Samples for Pesticides II*
Duration of funding: 11/01-2/02
Total amount of award: $3,855
Role: Principal Investigator

76) EnSafe, Inc., *Collecting Baseline Noise Exposure Assessments*
Duration of funding: 11/01-1/02
Total amount of award: $1,708
Role: Principal Investigator

77) Brownyard Claims Management, *Air and Swipe Samples for Pesticides I*
Duration of funding: 11/01-1/02
Total amount of award: $2,484
Role: Principal Investigator

78) EnSafe, Inc., *Air Sampling*
Duration of funding: 11/01-12/01
Total amount of award: $299
Role: Principal Investigator

79) Weyerhauser, Inc., *Collect, Submit, and Review Formaldehyde Samples*
Duration of funding: 10/01-12/01
Total amount of award: $889
Role: Principal Investigator***)***

80) Eagle Industries, Inc., *Environmental Health and Safety Inspections*
Duration of funding: 10/01-12/01
Total amount of award: $6,698
Role: Principal Investigator

81) DESA International, Inc., *Environmental Health and Safety Programs Review*
Duration of funding: 10/01-1/02
Total amount of award: $1,953
Role: Principal Investigator

82) Warren County Fiscal Court, *Survey for Asbestos in Old Jail*
Duration of funding: 10/01-11/01
Total amount of award: $879
Role: Principal Investigator

83) Pan-Oston Company, *Sampling for Welding Fumes*
Duration of funding: 9/01-11/01
Total amount of award: $615
Role: Principal Investigator

84) Willamette Industries, Inc., *Air Monitoring*
Duration of funding: 9/01-11/01
Total amount of award: $3,992
Role: Principal Investigator

85) Willamette Industries, Inc., *Pre-Corrective Action Air Sampling*
Duration of funding: 7/01-9/01
Total amount of award: $2,248
Role: Principal Investigator

86) EnScience, Inc., *Area Air Sampling*
Duration of funding: 7/01-9/01
Total amount of award: $1,111
Role: Principal Investigator

87) Lexington Fayette Urban City Government, *Bioaerosol Sampling and Testing*
Duration of funding: 6/01-8/01
Total amount of award: $1,994
Role: Principal Investigator

88) DESA International, Inc., *Environmental Health and Safety Services*
Duration of funding: 6/01-9/01
Total amount of award: $1,953
Role: Principal Investigator

89) Lexington Fayette Urban City Government, *Indoor Air Quality Investigation*
Duration of funding: 4/01-6/01
Total amount of award: $2,595
Role: Principal Investigator

90) Trinity Glass International, *Screen Printing Room Air Sampling Project*
Duration of funding: 2/01-4/01
Total amount of award: $1,354
Role: Principal Investigator

91) Weyerhauser, Inc., *Collection of Formaldehyde and Reviewing of Data*
Duration of funding: 10/00-12/00
Total amount of award: $841
Role: Principal Investigator

92) Monitoring Technologies Corporation, *Photorac Snapshot with Field Kit*
Duration of funding: 10/00-11/00
Total amount of award: $6000
Role: Principal Investigator

93) DESA International, Inc., *Environmental Health and Safety Services*
Duration of funding: 9/00-12/00
Total amount of award: $1,948
Role: Principal Investigator

94) Lilly Industries, Inc., *On-Site Survey/Stormwater and Groundwater Plan*
Duration of funding: 9/00-11/00
Total amount of award: $3,871
Role: Principal Investigator

95) Team Environment, *Area Sampling for Hydrogen Fluoride and Nitric Acid*
Duration of funding: 6/00-8/00
Total amount of award: $1,988
Role: Principal Investigator

96) Hildreth-Hopper Oil Company, *Phase I Environmental Assessment*
Duration of funding: 6/00-8/00
Total amount of award: $2,475
Role: Principal Investigator

97) Willamette Industries, *Bleached Pulp Mill IH Survey*
Duration of funding: 5/00-7/00
Total amount of award: $4,911
Role: Principal Investigator

98) DESA International, Inc., *Environmental Health and Safety Programs Review*
Duration of funding: 5/00-8/00
Total amount of award: $1,948
Role: Principal Investigator

99) Huish Detergents, Inc., *Pre-Mix Operation Air Sampling*
Duration of funding: 4/00-6/00
Total amount of award: $1,935
Role: Principal Investigator

100) Kentucky Micro-Finishing, Inc., *Industrial Drive Facility OSHA Compliance Study*
Duration of funding: 4/00-5/00
Total amount of award: $3,260
Role: Principal Investigator

101) Kerr Group, Inc., *Southwood Court OSHA and EPA Compliance Requirements*
Duration of funding: 4/00-5/00
Total amount of award: $3,260
Role: Principal Investigator

102) Willamette Industries, Inc., *Evaluation of Swipe Samples for Silica and Welding Metals*
Duration of funding: 3/00-5/00
Total amount of award: $2,484
Role: Principal Investigator

103) Mail-Well Label, *Records Review/Hazardous Materials Reporting*
Duration of funding: 2/00-3/00
Total amount of award: $611
Role: Principal Investigator

104) Bowling Green Municipal Utilities, *Indoor Air Quality Survey*
Duration of funding: 2/00-4/00
Total amount of award: $2,130
Role: Principal Investigator

105) DESA International, Inc., *OSHA Compliance Audit*
Duration of funding: 2/00-4/00
Total amount of award: $1948
Role: Principal Investigator

106) EMPE, Inc., *Industrial Hygiene Field Investigation II*
Duration of funding: 11/99-12/99
Total amount of award: $435
Role: Principal Investigator

107) DESA International, Inc., *Confined Space Assessment*
Duration of funding: 10/99-11/99
Total amount of award: $4,423
Role: Principal Investigator

108) Mail-Well Label, *Noise Dosimetry*
Duration of funding: 10/99-11/99
Total amount of award: $1,063
Role: Principal Investigator

109) Mail-Well Label, *Development of Training Programs*
Duration of funding: 10/99-12/99
Total amount of award: $3,231
Role: Principal Investigator

110) EMPE, Inc., *Industrial Hygiene Investigation I*
Duration of funding: 9/99-10/99
Total amount of award: $330
Role: Principal Investigator

111) DESA International, Inc., *Industrial Hygiene Assessment*
Duration of funding: 12/98-2/88
Total amount of award: $2,880
Role: Principal Investigator

112) Triad LLC, *Industrial Hygiene Sampling, Characterization and Assessment*
Duration of funding: 11/98-1/99
Total amount of award: $3,099
Role: Principal Investigator

113) SCA Hygiene Products, *Industrial Hygiene Sampling*
Duration of funding: 10/98-11/98
Total amount of award: $412
Role: Principal Investigator

114) Country Oven Bakery, *Ergonomics Study*
Duration of funding: 8/98-11/98
Total amount of award: $4,663
Role: Principal Investigator

115) Risk Management Group, *Environmental Health and Safety Services*
Duration of funding: 8/98-11/98
Total amount of award: $3,828
Role: Principal Investigator

116) Lexington Fayette Urban City Government, *IAQ Project #1*
Duration of funding: 3/98-5/98
Total amount of award: $2,551
Role: Principal Investigator

117) Great Southern Entertainment Corporation, *Environmental Noise Sampling*
Duration of funding: 10/97-12/97
Total amount of award: $6,268
Role: Principal Investigator

118) Sarah Budde & Associates, *Noise Dosimetry Study*
Duration of funding: 6/97-8-97
Total amount of award: $2,440
Role: Principal Investigator

119) International Paper, Inc., *Economic Development Project*
Duration of funding: 1/97-6/97
Total amount of award: $4,697
Role: Principal Investigator

120) Weyerhauser, Inc., *Noise Level Assessment*
Duration of funding: 1/97-3/97
Total amount of award: $3,140
Candidate's role: Principal Investigator

121) Commonwealth of Kentucky Program of Distinction Grant - Engaging Students, *EHSRC*
Duration of funding: 1998-2004
Total amount of award: $320,000
Role: Center Director

122) National Institute of Occupational Safety and Health, *NIOSH Training Grant Program*
Duration of funding: 1996-2004
Total amount of award: $32,500/year
Role: Project Personnel

123) Western Kentucky University Summer Faculty Grant Funding, *Automated Sampling for Lead in the Occupational Environment*
Duration of funding: 5/03-8/03
Total amount of award: $5,500
Role: Principal Investigator

124) Kentucky Department of Public Health, *Proposal to Develop Survey to Assess Preparedness, Planning, Readiness, & Basic Competencies of First Responders*
Duration of funding: 10/02-10/04
Total amount of award: $130,000
Role: Project Personnel

125) McConnell Appropriations, *Rural Health Initiative-HEAT Unit*
Duration of funding: 7/02-6/04
Total amount of award: $520,000
Role: Co-Principal Investigator (internal)

126) Western Kentucky University New Faculty Grant, *Indoor Air Quality Monitoring*
Duration of funding: 5/97-8/97
Total amount of award: $5000
Role: Principal Investigator

127) Western Kentucky University President Special Grant Funding, *PID & Instrumentation*
Duration of funding: 2/97
Total amount of award: $2500
Role: Principal Investigator

128) WKU President Special Grant Funding, *Indoor Air Quality Monitor*
Duration of funding: 11/96
Total amount of award: $3750
Role: Principal Investigator

129) Old Dominion University Faculty Development Funds, *Automated Sampling Techniques* Duration of funding: 8/05-5/06
Total amount of award: $3000
Role: Principal Investigator

130) Old Dominion Summer Fellowship, *Systems Development in Automated Sampling*
Duration of funding: 5/06-7/06
Total amount of award: $5000
Role: Principal Investigator

131) Ohio Board of Regents, *Productivity Improvement Challenge*
Duration of funding: 1/94-12/94
Total amount of award: $33,000
Role: Principal Investigator

132) U.S. Department of Labor, ORAU *Health Physics Fellowship*
Duration of funding: 8/92-5/94
Total amount of award: $150,000
Role: Project personnel (doctoral support)

133) University of Miami, *National Accredited Business School Merit Fellowship*
Duration of funding: 8/90-5/91
Total amount of award: $12,000/year
Role: Recipient

134) Ball State University, *Computer Competency Grant*
Duration of funding: 3/90-8-90
Total amount of award: $3000
Role: Principal Investigator

135) Ball State University, *Terry Business Graduate Scholarship*
Duration of funding: 8/88-12/88
Total amount of award: $4000
Role: Recipient

Service and Engagement

Sponsored consulting/applied research projects (Approximate Total Awarded: $450,000)

1) 12/16-1/17, Technical Regulatory and Compliance Experts – Utah (TRaCE-Utah) project with PacifiCorp of Point of Rock, WY, *Welding System Evaluation.* ($1,257.57)

2) 12/16-2/17, Technical Regulatory and Compliance Experts – Utah (TRaCE-Utah) project with Sweetwater Memorial Hospital of Rock Springs, WY, *Quantitative Respiratory Fit Test Training.* ($2,009.17)

3) 8/11-10/11, Purdue Technical Assistance Program (TAP) project with Thorpe Woodworks of New Albany, IN, *Discuss air quality certification requirements.*

4) 8/11-10/11, TAP project with Jasper Engines of Jasper, IN, *Welding process EHS assistance.*

5) 4/11-6/11, TAP project with Mayfield Corporation of Wanatah, IN, *Title V air permit assistance*.

6) 3/11-6/11, TAP project with Electro-Spec of Franklin, IN, *Follow-up study from 2008 air emission study #11449.*

7) 2/11-6/11, TAP project with Alcoa, Inc. of Lafayette, IN, *Provide recommendations to control/remediate noise levels originating from aluminum extrusion and tubing cut-off saws.*

8) 7/10-9/10, TAP project with Agri Processing Services, LLC of Carmel, IN, *Provide overview of shipping and handling of HAZMAT materials per state and federal transportation agencies.*

9) 6/10-current, TAP project with RR Donnelley & Sons Co. of Warsaw, IN, *Provide guidance and assistance on several aspects of cooling tower system.*

10) 2/10-5/10, TAP project with Scott County Economic Development Corporation of Scottsburg, IN, *Impact of wood-fueled electricity generator on local air quality.*

11) 12/09-4/10, TAP project with Vector USA of Kentland, IN, *Assist with technical questions for an environmental permit application.*

12) 12/09-3/10, TAP project with Cook Biotech Inc., West Lafayette, IN, *Provide three 4-hour sessions on hazardous materials training.*

13) 11/09-1/10, TAP project with Kirby Risk of Lafayette, IN, *Provide an ISO 14001 Audit.*

14) 10/09-8/10, TAP project with Construction Recycling Solutions of Fort Wayne, IN, *IDEM marketing and distribution permit for recycled ground wood product containing OSB and plywood*.

15) 11/09-1/10, TAP project with Odorox Environmental, LLC of Westfield, IN, *Discuss ozone measurement in the presence of hydroxyls and the science behind the hydroxyl generating device*.

16) 9/09-11/09, TAP Project with Robert Weed Plywood of Bristol, IN, *Abatement of noise in lamination trim process*.

17) 4/09-7/09, TAP project with Hiler Industries of LaPorte, IN, *Determine approaches to reduce CO emissions from resin coated sand molds.*

18) 4/09-7/09, TAP project with Dorel Juvenile of Columbus, IN, *Assist client with environmental compliance processes.*

19) 4/09-5/09, TAP project with Donaldson Company, Inc. of Monticello, IN, *Discuss cleaning of rotational molding tank.*

20) 3/09-7/09, TAP project with Firestone Diversified Products of Indianapolis, IN, *Find potential use for foam dust bricks.*

21) 3/09-6/09, TAP project with Wood-Mizer Products of Lizton, IN, *Discuss emissions of biomass furnace with multiple fuel options*.

22) 3/09-6/09, TAP project with Greenbush Industries of Lafayette, IN, *Discuss how to recycle multi-material product.*

23) 1/09-6/09, TAP project with Wayne Combustion Systems of Fort Wayne, IN, *Determination of environmental permits required to burn chicken litter in a particular type of proprietary furnace.*

24) 1/09-7/09, TAP project with RR Donnelley of Warsaw, IN, *Provide guidance and recommendations for an iron filtration system for plant water.*

25) 11/08-5/09, TAP project with RR Donnelley of Warsaw, IN, *Provide assistance in measuring true output of industrial air compressors*.

26) 07/08-11/08, TAP project with Columbian Home Products of Terre Haute, IN, *Energy recapture feasibility study.*

27) 07/08-11/08, TAP project with Jayco, Inc., of Middlebury, IN, *Provide feasibility analysis for waste wood boiler system.*

28) 07/08-9/08, TAP project with Tru-Flex Metal Hose of West Baden, IN, *Provide an ISO 14001 audit.*

29) 07/08-09/08, TAP project with Hoffco Comet Industries of Richmond, IN, *Provide an ISO 14001 audit.*

30) 03/08-04/08, TAP project with Tru-Flex Metal Hose of West Baden, IN, *Provide and environmental noise assessment.*

31) 02/08-06/08, TAP project with Eli Lilly Tippecanoe Laboratories of West Lafayette, IN, *Hydroelectric power feasibility from wastewater stream*.

32) 02/08-4/08, TAP project with Electro-Spec of Franklin, IN, *Guidance on air monitoring for assembly facility*.

33) 01/08-3/08, TAP project with C&D Technologies of Attica, IN, *An evaluation of alternative battery lid adhesives*.

34) 01/08-3/08, TAP project with Cook Biotech of West Lafayette, IN, *Determination of the energy efficiency of a facility HVAC system*.

35) 01/08-3/08, TAP project with Griffin Analytical of West Lafayette, IN, *DOT HazMat and OSHA HazCom training and program development*.

36) 12/07-5/08, TAP project with Indiana Heat Transfer of Plymouth, IN, *Environmental assessment and recommendations*.

37) 10/07-12/07, TAP project with Consolidated Leisure Industries of Middlebury, IN, *An air sampling survey for VOCs in the recreational vehicle/trailer industry*.

38) 10/07-12/07, TAP project with Kruz of Knox, IN, *Industrial hygiene air sampling and engineering controls assessment*.

39) 8/07-10/07, TAP project with Subaru of Indiana Automotive (SIA) of Lafayette, IN, *Energy audit of paint shop area*.

40) 4/07-5/07, TAP project with Cook Group, Inc. of Bloomington, IN, *Indoor air quality survey: French Lick Resort and Casino* (follow-up).

41) 3/07-4/07, TAP project with Cook Group, Inc. of Bloomington, IN, *French Lick Resort and Casino air quality walk-through survey*.

42) 01/06-10/06, TAP project with Brogan Pharmaceuticals of Schereville, IN, *Second phase of assistance in specifying a clean room and ensuring compliance with standards*.

43) 02/06-03/06, TAP project with Sinclair Glass of Hartford City, IN, *Evaluation of energy efficiency of custom glass maker*.

44) 01/06-02/06, TAP project with The Republic of Columbus, IN, *Evaluation of an indoor air quality and ventilation problem in a printing press operation*.

45) 09/05-01/06, TAP project with Brogan Pharmaceuticals of Schereville, IN, *Assistance in specifying a clean room and ensuring compliance with various standards*.

46) 05/05-08/05, TAP project with Grand Terrain Products of South Bend, IN, *Environmental assessment of PLA packaging*.

47) 10/04-2/05, TAP project with Grand Terrain Products of South Bend, IN, *Evaluation of the moldability of a polylactic polymer*.

Graduate Student Committee Membership (2006 – present; 29 Chair & 5 Co-Chair):

1) 5/27 – Doreen Denso, PhD degree (*Chair*), Exposure science characterization and modeling for heavy metal concentrations in various media

2) 5/24 – Thomas Rodriguez, PhD degree (*Chair*), Evaluating hearing conservation educational materials, possible interventions, and novel training protocol to encourage proper hearing protection placement in U.S. military service members

3) 5/24 – Clayton Garner, MS degree (*Chair*), Assessment of hearing conservation programs in the U.S. military

4) 5/24 – Lucas Pettit, MS degree (*Chair*), Assessment of hearing conservation strategies for general public and industry

5) 5/24 – Karly Anderson, MS degree (*Chair*), The use of human exposure modeling (HEM-4) to model ethylene oxide emissions from major commercial sterilizers in Utah

6) 5/23 – Muhammad Aiman, MS degree, Environmental Exposures of the Northern Arapaho Tribe: An Exploratory Study

7) 5/23 – Travis Jacobs, MS degree, Industry Survey of the Most Common Respirable, Inhalable, and Total Dust Sampling Methods

8) 5/23 – Zachary Palmer, MS degree, Indoor Air Quality (PM2.5 and CO2) monitoring on the University of Utah Campus

9) 5/23 – Skyler Spooner, MS degree (*Chair*), Ambient monitoring and health risk assessment of ethylene oxide emissions from major commercial sterilizers in Utah

10) 8/22 – Cam Catherine, MS degree PA, Chronic care management at South Main Clinic: A retrospective perspective

11) 8/22 – Stacie Henderson, MS degree PA, Chronic care management at South Main Clinic: A retrospective perspective

12) 8/22 – Millie Oldroyd, MS degree PA, Chronic care management at South Main Clinic: A retrospective perspective

13) 8/22 – Cari Sanyer, MS degree PA, Chronic care management at South Main Clinic: A retrospective perspective

14) 8/22 – Deborah Bell, MS degree PA, COVID-19 severity in people living with HIV: A pilot study in the Rocky Mountain West

15) 8/22 – Laura Spruit, MS degree PA, COVID-19 severity in people living with HIV: A pilot study in the Rocky Mountain West

16) 8/22 – Tyler Brown, MS degree PA, COVID-19 severity in people living with HIV: A pilot study in the Rocky Mountain West

17) 8/22 – Katie O'Flanerty, MS degree PA, COVID-19 severity in people living with HIV: A pilot study in the Rocky Mountain West

18) 5/22 – Tyler Mathis, MS degree (*Chair*), Ambient monitoring and health risk assessment of ethylene oxide emissions from major commercial sterilizers in Utah

19) 5/22 – John Doyle, MS degree, A qualitative analysis of the effects of post-concussive dizziness on the ability of Post-9/11 Veterans to perform meaningful activity

20) 8/22 – Daniel Agyemang, PhD degree, The mediation and moderation effect of social support on the relationship between opioid misuse and suicide attempts among Native American youth in New Mexico: 2009-2019 Youth Risk Resiliency Survey (NM-YRRS)

21) 5/21 – Benson Young, MS degree, Degradation of volatile organic compounds (VOCs) and volatile sulfur compounds (VSCs) in sampling containers

22) 5/21 – Katie Hagman, MS degree, Investigation of cleaning practices through simulated vomitus

23) 5/21 – Sharly Coombs, MS degree, Environmental and occupational health on the Navajo Nation: A scoping review

24) 5/21 – Travis Tamowski, MS degree, Evaluation of common inhalable aerosol samplers in a controlled wind tunnel

25) 5/21 – Gabriela Teniza, MS degree, Comparison of comparable aerosol samplers during simulated personal sampling

26) 5/21 – Marion Woodfield, MS degree, The influence of face shields on aerosol exposure reduction

27) 12/20 – Amy Loftis, MS degree, An alternative option to current particle samplers: An equivalence study

28) 12/20 – Alex Watts, MS degree, The 5G tower wave

29) 12/20 – Lindsay Scholl, MS degree, Incidence of workers' compensation claims in opioid-using truck drivers

30) 5/20 – Madison Ellis, MS degree (*Chair*), A comparison of heat stress conditions based on kitchen configurations in the full service restaurant industry

31) 5/20 – Jarom Kuhre, MS degree, A comparison of occupational blood lead level (BLL) prevalence and airborne lead concentration in Utah and nationally

32) 5/20 – Bruce Niebergall, MS degree, Plume analysis from laser hair removal: A pilot study

33) 5/20 – Keller Reeves, MS degree, A comparison of competencies between Hurricane, Utah's local emergency planning committee (LEPC) and Zion National Park (ZNP) first responders

34) 5/20 – Raquel Robello, MS degree (*Chair*), A comparison study to investigate heavy metal soil contamination at two different frontier tribal locations

35) 5/20 – Derek Sandberg, MS degree, Is the new coal dust standard protective for respirable quartz?

36) 5/20 – Logan Webb, MS degree (*Chair*), A comparison study of indoor air quality conditions between two different frontier tribal communities

37) 12/19 – Angela Ho, MS degree, An investigation of aerosol measurement degradation in low-cost particle sensors using laboratory calibration and field validation

38) 12/19 – Kaylin Lake, MS degree, A pilot study to investigate heavy metal soil contamination in a frontier tribal population

39) 5/20 – Andria Thatcher, Ph.D., Manual material handling and low back pain in occupational drivers: A prospective study

40) 12/19 – Onwuka Onkorie, Ph.D. degree, Role of a cardiovascular disease and related factors in the prevalence of truckers compensation claims

41) 5/19 – Lauren Haggerty, MS degree (*Chair*), The evaluation of Kenyan coolstoves ventilation

42) 5/19 – Hannah Phillips, MS degree (*Chair*), A novel exposure modeling technique for evaluating employee chemical exposures

43) 5/19 – Jared Stenberg, MS degree (*Chair*), A holistic approach to characterizing environmental stressor exposures for the indigenous communities of Utah

44) 5/19 – Tyler McCord, MS degree, Statistical method of evaluating work shift job satisfaction

45) 5/19 – Jacob Thomas, MS degree, A pilot study predicting core body temperatures of workers in hot work environments using infrared imagery

46) 12/19 – Joemy Ramsay, Ph.D. degree, Measurement of exposure to particulate matter in the nasal airway

47) 5/19 – Victor Alavez, (in progress), Ph.D., TBD

48) 8/19 – Naomi Riches, Ph.D. degree (*Chair*), The development of an exposure model for human populations to airborne heavy metal concentrations near the Great Salt Lake

49) 8/18 – McKenzie Barlow, MS degree, Comparative analysis of physiological measurements and environmental metrics on predicting heat stress related events (Cal Poly – Biomedical Engineering)

50) 5/18 – Danielle Mecate, MS degree (*Chair*), Temperature inversions and ultrafine particulate concentrations in the Salt Lake Valley

51) 5/18 – Jesse Zmoos, MS degree, Asthma IAQ pilot project

52) 5/18 – Ben Borsh, MS degree, Evaluation of a modified CFC

53) 5/18 – Charlotte Robison-Hanchett, MS degree, An evaluation of true slip-resistant footwear

54) 5/18 – Alex Cox, MS degree, Development of an empirical formula for describing human inhalability of airborne particles

55) 5/18 – Aaron Cox, MS degree, CO_2 and NO_2 exposures among ice rink employees

56) 5/17 – Marie Thorsen, MS degree (*Chair*), Characterization of heavy metals on Great Salt Lake new shoreline soils

57) 5/17 – Scott Clingenpeel, MS degree (*Chair*), A novel approach to beryllium removal efficiencies from surface wipes

58) 5/17 – Sarah Van Orman, MS degree, Heat stress characterization using trans-epidermal water loss and impedance measurements

59) 5/17 – Austin Simons, MS degree (*Chair*), A comparison between active and passive techniques for employee exposure assessment

60) 5/17 – Danielle McKenzie-Smith, MS degree, Development of calibrations curves for direct-reading particulate monitors

61) 5/17 – Robert Vercellino, MS degree, Field validation and refinement of an integrated System of low-cost, real-time, networked multi-sensors and software/applications for automated exposure assessment

62) 8/18 – Kryztopher Tung, Ph.D., A real-time method for evaluating and monitoring heat stress potential using wearable biosensors

63) 12/16 – Floyd Johnson, Graduate Certificate (*Chair*), The development of a predictive algorithm for individualistic heat stress characterization and assessment

64) 5/16 – Zachary Arnold, MS degree, Estimation of body core temperatures in metal casting areas using thermal imagery

65) 5/16 – Clint Holm, MS degree, Evaluation of physiological strain in a hot work areas using thermal imagery

66) 5/16 – Alex Shahan, MS degree, The use of a novel inhalable sampler for sampling metals at a smelter

67) 5/16 – Justin Stewart, MS degree, The use of a novel inhalable sampler at different flow rates in a wind tunnel

68) 5/15 – Babak Bahrani, MS degree, Effect of weathering on the performance of fire retardant coatings

69) 5/15 – Travis Anderson, MS degree (*Chair*) , Analysis of residual stress resulting from turning process of traditional facing compared to dithering

70) 5-15 – Bryan Dunn, MS degree, Fire protection and administration – course only option

71) 12/14 – Marla Corson, Ph.D. degree (*Co-Chair*), Energy conservation and intensity reduction: manager decisions and actions

72) 12/14 – Damian Owens, MS degree, Fire protection and administration – course only option

73) 5/14 – Kevin Gordon, MS degree (*Chair*), Fire protection and administration – course only option

74) 5/13 – Chunlin Liu, MS degree (*Chair*), Fire protection and administration - course only option

75) 5/12 – Jameson Nelson, MS degree (*Chair*), Acoustic emission detection of metals and alloys during machining operations

76) 5/12 – Kevin Rodgers, MS degree, Energy reduction using biofiltration in a highly efficient residential home

77) 5/12 – Dylan Schmitter, MS degree (*Co-Chair*), Environmentally responsible manufacturing in small Indiana businesses

78) 5/12 – Kurt Mink, MS degree, The effects of organizational structure on sustainability report compliance

79) 8/11 – Matt Tumey, MS degree, The effects of high intensity ultrasonic vibrations on montmorillinite/epoxy composites

80) 8/11 – Tony Huck, MS degree (*Chair*), A method for accurate crush stiffness coefficient estimation

81) 8/11 – Craig Zehrung, MS degree, Design and development of a novel wind tunnel

82) 5/11 – Jim Martin, MS degree *(Chair*), Merging regulatory and corporate responses to climate change with cost savings and other benefits

83) 5/11 – Cory Allen, MS degree (*Chair*), Development of a sustainable manufacturing portal at Alcoa

84) 5/11 – Edward Lathery, MS degree, Analysis of turning AISI-1053 steel hub flange product

85) 12/10 – Hei Fe, MS degree, Metals processing (course only)

86) 8/10 – Monica Rodriguez, Ph.D. degree (*Co-Chair*), Relationships between wet bulb globe temperature and evaporative cooling responses under heat stress

87) 8/10 – Elmer Ray Spradlin, MS degree, Improvement of material usage using electrostatic bells with updated technology on robotic equipment

88) 5/10 – Sandun Kuruppu, MS degree, Implementation and performance evaluation of a regenerative braking system coupled to ultracapacitors for a brushless dc hub motor driven electric tricycle

89) 5/10 – Tamara Novakov, Ph.D. degree, Computational analysis of micromachining Ti6A14V

90) 5/10 – Scott Wilson, MS degree, Integrating solar heating into an air handling unit to minimize energy consumption

91) 5/10 – Keith Spence, MS degree (*Co-Chair*), Examination of a CO2 monitoring system for the mechanical ventilation system of a gas exchange cuvette

92) 8/09 – John Burgess, MS degree, Wear of nanostructured tool coatings bonded to turning inserts dry turning a tantalum tungsten alloy

93) 8/09 – David Goodman, Ph.D. degree (*Co-Chair*), Effects of an informal energy exhibit on knowledge and attitudes of fourth- and fifth-grade students

94) 5/09 – Ashley Geddes, MS degree, Improving Cost Estimation at Rolls-Royce (*Chair*)

95) 5/09 – Kyle Duffin, MS degree, Nitinol Cannula Testing for Medical Devices (*Chair*)

96) 5/09 – Jui Liu, MS degree, Grain Refinement Method as to Cast Microstructure of AZ91E Using Ultrasonic Vibrations and Nanoparticles

97) 12/08 – Sandeep Poola, MS degree, Grain Refinement of Magnesium Alloys

98) 8/08 – Jason Kutch, MS degree, Combining U.S. and Swiss Low Energy Residential Construction Practices to Minimize Energy Consumption

99) 5/08 – Sean Odukomaiya, MS degree, Optimizing HVAC System Performance and Human Thermal Comfort

100) 5/08 – Patrick Senarith, MS degree, Diagnostic Tool for Evaluating Arterial Compliance

101) 12/07 – Grant Robinson, Ph.D. degree, Wear of Nanostructured Coated Cutting Tools During Mixed Scale Machining

102) 12/07- Vinay Gorrepati, MS degree, Development of a Computational Fluid Dynamic Model of a Pneumatic Projector

103) 5/07 – Miguel Gonzalez, MS degree, In-Process Slag Removal in a Rotary Kiln Incinerator (RKI) by Introduction of Chemical Additives (*Chair*)

104) 5/06 – Brian Bozell, MS degree, Design, Installation, and Commissioning a Web Enabled HVAC Test Facility

Recent Committees and Internal University Service:

1) 10/22-present, Environmental Epidemiological Tenure Faculty Search Committee (School)
2) 7/22-present, Industrial Hygiene Tenure Line Faculty Search Committee (Department)
3) 3/22-present, Health Equity Tenure Line Faculty Search Committee (Department)
4) 8/21-present, HSF Review Committee/Division Leadership Committee (Department)
5) 8/21-present, Biostatistics Tenure Line Faculty Search Committee (Department)
6) 7/21-present, Promotion and Tenure Committee (FARAC) (School)
7) 4/21-present, Honorary Degree Program Review (University – ad hoc)
8) 1/21-present, Promotion and Tenure Committee (FARAC) (Department)
9) 12/20, grant application reviewer, SOM Research Incentive Seed Grant (School)
10) 4/20, poster abstract reviewer, DFPM Student Poster Session (Department)
11) 10/19, poster reviewer, SOM Alumni Weekend Poster Session (Department)
12) 10/19-present, member, PA division, Pharmacology Faculty Search Committee (Division)
13) 1/19-11/19, Co-Chair, Public Health Division Chief Search Committee (Department)

14) 8/19-9/19, grant reviewer, GMaP Region 6 Pilot Grant Program (School)
15) 12/18, grant application reviewer, SOM Research Incentive Seed Grant (School)
16) 10/18-present, Central Leadership Committee (Department)
17) 10/18-present, Research & Innovation Mission Committee (Department)
18) 10/18-present, PA Tenure Line Faculty Search Committee (Department)
19) 9/18-present, FM Residency Director Search Committee (Department)
20) 6/17-present, Mentor, National Research Mentoring Network (NRMN)
21) 3/17-present, Departmental Executive Committee (Department)
22) 10/16-present, Education Mission Committee Chair (Department)
23) 1/16-present, Research Committee Working Group (Department)
24) 1/16-present, RMCOEH Center Executive Committee (Division)
25) 6/17-3/18, PA Division Chief Search Committee (Department)
26) 9/15-present, Department of Graduate Studies Committee (University)
27) 9/15-present, TFR & CFR Review Committee (Department)
28) 9/14-6/15, Graduate Committee Member
29) 8/13-5/14, Departmental Review Committee
30) 8/12-7/13, MFPA Graduate Chair
31) 8/10-6/12, COT Graduate Education Committee
32) 6/10-6/12, MET/MFET Graduate Education Committee, Chair
33) 6/10-6/12, COT ad hoc ECN/TCN merger committee
34) 8/05-8/10, COT Safety Committee (College)
35) 1/06, New Technology Building feasibility committee
36) 8/06-7/07, Materials Area Curriculum Subcommittee, Chair
37) 8/06-7/07, MET Curriculum Subcommittee
38) 8/06-8/07, MET/MFET Graduate Education Committee, Chair
39) 8/06-6/12, Graduate Education Committee (College)
40) 12/05-1/07, BS MET Only Straw Man Committee, Chair
41) 8/05-6/12, Health and Safety Committee, Chair
42) 8/05-6/12, Health and Safety Committee (College)
43) 8/96-7/04, served on 9 departmental committees (three as Chair) at WKU
44) 8/96-7/04, served on 4 University committees at WKU
45) 8/07-6/12, COT Graduate Education Committee, member
46) 8/06-6/12, COT Strategic Planning Committee (ad hoc), member
47) 8/05-6/12, COT Safety Committee, member
48) 1/06, New Technology Building feasibility committee (ad hoc), member
49) 8/96-7/04, served on five College committees at WKU
50) 8/06-6/12, Materials Area Curriculum Subcommittee, Chair (2006-2007)
51) 8/07-6/12, Manufacturing Area Curriculum Subcommittee, member
52) 8/06-8/07, MET Curriculum Subcommittee, member
53) 8/06-6/12, MET/MFET Graduate Education Committee, Chair (2007)
54) 2005-2007, BS MET Only Straw Man Committee, Chair
55) 8/05-7/12, Health and Safety Committee, Chair

Internal Administrative Appointments:

1. Interim Vice Chair of Education and Research, 10/18 – 7/19, University of Utah, Department of Family and Preventive Medicine
2. Chair, Education Mission Committee, 10/16 – 7/19, Department of Family and Preventive Medicine, University of Utah
3. Director, Industrial Hygiene, 3/16 – 7/19, Rocky Mountain Center of Occupational and Environmental Health, University of Utah
4. Director, NIOSH Targeted Research Training (TRT), 7/16 – 7/19, Rocky Mountain Center of Occupational and Environmental Health, University of Utah
5. Director, Occupational and Environmental Health Graduate Programs, 11/15 – 5/19, Division of Occupational and Environmental Health, Department of Family and Preventive Medicine, University of Utah
6. Associate Chair for Research Cultivation, 8/12 – 5/15, Department of Engineering Technology and Construction Management, University of North Carolina Charlotte
7. Director, Graduate Programs, 8/08 – 5/12, Department of Mechanical Engineering Technology, Purdue University
8. Director, Environmental, Health, and Safety Resource Center (EHSRC), 8/00 – 5/04, Department of Public Health, Western Kentucky University
9. Program Coordinator, Environmental Health and Safety Undergraduate and Graduate Programs, 8/00 – 5/04, Department of Public Health, Western Kentucky University

Noteworthy Internal Service Activities (last 3 years):

1. Occupational and Environmental Health Programs Graduate Council Review, 7/18 to 5/19, Division of Occupational and Environmental Health, Department of Family and Preventive Medicine, University of Utah
2. ABET Re-Accreditation Lead for MS in Occupational Health with an Emphasis in Industrial Hygiene, 1/16 – 7/17
3. Numerous reports and grant renewal activities for NIOSH OSHERC Training Grant, 7/15 – present, Rocky Mountain Center of Occupational and Environmental Health, Director of Industrial Hygiene and Director of TRT, grant renewed on 7/1/18 for $8.43 million
4. Served on 3 staff member search committees and 6 faculty/leadership search committees, 7/15 – present, Department of Family and Preventive Medicine, University of Utah

Noteworthy External Service Activities:

1. President Utah Chapter of AIHA, 12/21 – present (International)
2. Member, AIHA ACTIONS Governmental Relations Committee, 6/18 – present, (International)
3. Member, ANSI/ASEE Z-92 Ventilation Standards Subcommittee, 7/17 – present, (International)
4. Conducted over fifty business and industry continuing education courses and workshops with over one thousand enrollees since 1994. It is estimated that approximately seventy-five different companies or governmental entities have

been represented. The majority of these courses have been related to OSHA and EPA certification (and recertification), and, in particular, the Hazardous Waste Operations and Emergency Response (HAZWOPER) standard. These entries are detailed in a previous section of the document.

Expert Witnessing and Consultation:
9/99-1/00, Willamette, Inc., expert witness
3/00-1/01, Danks and Danks, expert witness
5/01-12/01, Logan Aluminum, expert witness
12/01-2/02, DESA International, consultant
5/02-12/02, EEOC, expert witness
6/02-3/03, Federal Mogul, consultant
1/05-5/05, Law Offices of Marc S. Sedwick, expert witness
12/07-Boam Law/Luvata, expert witness
12/09 – State Farm Insurance, expert witness

External Program and Course Reviews:
1. 7/08, external on-line course review, University of Connecticut
2. 4/08, external on-line course review, Columbia Southern University
3. 5/05, external program review for accreditation, Middle Tennessee State University's Environmental Health and Safety program, external reviewer
4. 3/05, external program review for accreditation, Ohio University-Chillicothe's Environmental Engineering Technology program, external reviewer

EAST TENNESSEE STATE UNIVERSITY
BOARD OF TRUSTEES

INFORMATION ITEM

DATE:	September 15, 2023
ITEM:	Academic Notification for Period of January 1, 2023 through July 21, 2023
COMMITTEE:	Academic, Research, and Student Success
PRESENTED BY:	Dr. Kimberly D. McCorkle Provost and Senior Vice President for Academic Affairs

This information item is presented to the ETSU Board of Trustees as an update regarding academic action items related to curriculum modifications that have occurred between January 1, 2023, through July 31, 2023. The report is divided into two sections: Part I represents Tennessee Higher Education Commission (THEC) notification items and Part II represents ETSU academic approval items that do not require THEC action.

Part I: THEC Notification Items

These curriculum items are fully vetted through the ETSU curriculum approval processes and are subsequently submitted to THEC as notification items. The following table outlines the types of academic action notifications for the period of January 1, 2023, through July 31, 2023:

Type of Action – THEC Notification	***Quantity***
Change of Student Credit Hours in Existing Program	6
Establish Certificate Program	6
Concentration Name Change	5
Establish New Concentration in Existing Program	4
Academic Program Name Change	1
Terminate Academic Program or Concentration	1

Items identified in the table above are represented by the following curriculum descriptions:

Change of Student Credit Hours in an Existing Program:

Revise Curriculum Substantive - Applied Data Science (degree credit change)

This curriculum revision was the result of a review of other similar programs and will reduce the total credits of the degree from 39 credits to 33 credits. The reduction in credits will allow students the possibility of program completion in 18 months as opposed to 24 months. This will bring the program in line with similar programs across the region and nation, as well as enhance future marketing efforts.

Revise Curriculum Substantive - Masters of Accountancy all concentrations (degree credit change)

Program faculty conducted an extensive review of other similar accountancy programs across the region and nation. Accountancy programs across the state and region are largely 30 credit programs. In an effort to continue to be competitive with other programs, this curriculum revision will result in the reduction of total program credits from 36 credits to 30 credits. This change will be positive for student program completion and future recruiting efforts.

Revise Curriculum: Substantive – MEd School Librarianship (change in degree credit for Initial Licensure Option)

Initial licensure requirements for this degree have been modified by the Tennessee Department of Education (TNDOE). The licensure requirement change is that students will now have a 15-week full-time student teaching library experience in a K12 placement. To meet this additional internship requirement, the total program credits will increase from 36 to 39. This range accommodates both the initial licensure program and the non-licensure option.

Revise Curriculum Substantive - Nursing DNP ETSU-TTU Adult-Gerontology Acute Care Nurse Practitioner (degree credit change)

The College of Nursing is restructuring the ETSU-TTU DNP Program curriculum to better meet the needs of students, improve our ability to compete with other programs, and meet the American Association of Colleges of Nursing 2021 Essentials program standards. The course content has been reviewed and revised to eliminate repetitive and non-essential content and new courses have been added. There is an associated program total credit change from 84 to 75. This program revision keeps the program aligned with standards as well as keeping it in line with other programs across the nation.

Revise Curriculum Substantive - Nursing DNP ETSU-TTU Pediatric Nurse Practitioner – Primary Care (degree credit change)

The College of Nursing, working collaboratively with TTU faculty, is restructuring the ETSU-TTU DNP Program curriculum to better meet the needs of students, improve our ability to compete with other programs, and meet the American Association of Colleges of Nursing 2021 Essentials program standards. The course content has been reviewed and revised to eliminate repetitive and non-essential content and new courses have been added. There is an associated program total credit change from 89-92 to 77. This concentration is a TTU concentration and has been approved through the curriculum process at both ETSU and TTU.

Revise Curriculum Substantive - Nursing DNP ETSU-TTU Women's Health Care Nurse Practitioner (degree credit change)

The College of Nursing, working collaboratively with TTU faculty, is restructuring the ETSU-TTU DNP Program curriculum to better meet the needs of students, improve our ability to compete with

other programs, and meet the American Association of Colleges of Nursing 2021 Essentials. The course content has been reviewed and revised to eliminate repetitive and non-essential content and new courses have been added. There is an associated program total credit change from 84 to 79. This concentration is a TTU concentration and has been approved through the curriculum process at both ETSU and TTU.

Establish Certificate Program:

Establish New Certificate – Healthcare Spanish

Language barriers present significant obstacles for Spanish-only patients seeking healthcare in the United States. There is a demand for healthcare professionals with cultural and linguistic competency to work with this population. The graduate 12-13 credit certificate in Healthcare Spanish meets this societal need by enabling students seeking a graduate degree in health professions to acquire the language competency to treat Hispanic patients.

Establish New Certificate – Child Advocacy Studies Training

This 9-credit graduate certificate program will address treatment and advocacy related to child maltreatment from an interprofessional perspective. The Tennessee Department of Children's Services requested that social work programs in the state of Tennessee consider offering this course of study. There is a high demand for individuals with expertise in child welfare within the state of Tennessee.

Establish New Certificate – Interprofessional Pediatric Feeding

The proposed Interprofessional Pediatric Feeding 9-credit graduate certificate at ETSU will establish clinical expertise in teams from multiple disciplines to provide evaluation and intervention to an under-identified and underserved population: young children with disorders related to feeding.

Establish New Certificate – Educator Job Embedded

There is a national shortage of teachers, and this certificate will help address this shortage by providing an alternative pathway to licensure for some students. This graduate 12-credit certificate allows students to work in a Tennessee public school district while fulfilling Tennessee licensure requirements. The proposed certificate is unique in that it allows undergraduate students who have enough credit hours to graduate without licensure an option to complete licensure requirements while being actively employed in a school district. Currently, there is no pathway like this available to undergraduate students in Tennessee.

Establish New Certificate – Student Affairs

The Tennessee Board of Regents (TBR) has indicated a need for staff members working in student life areas to access additional professional education/training. Many of these employees do not have a background in student affairs work and this 12-credit certificate would provide an educational foundation beyond TBR-provided professional development training.

Establish New Certificate – Child Advocacy Studies

Child Advocacy Studies (CAST) is a nationally recognized curriculum of study to prepare individuals to work in child welfare or in a profession that engages with victims of child abuse. This 9-credit undergraduate certificate program will address treatment and advocacy related to child maltreatment from an interprofessional perspective.

Concentration Name Change:

Concentration Name Change - Interdisciplinary Studies Major BS Liberal Studies to Integrative Studies

The purpose of this name change is to describe to prospective students the focus and purpose of the concentration more precisely. The Integrative Studies concentration provides broad preparation across the arts, humanities, social sciences, natural sciences, and technology as well as offering an opportunity for students to choose one of five focus areas for elective course work. It is expected that this renaming will increase student interest in and completion of the degree.

Concentration Name Change - Audio Production for Musicians to Audio Production

The National Association of Schools of Music (NASM) issued an action report to certify that ETSU's BA in Bluegrass, Old-Time, and Country Music Studies is an Appalachian Studies major and not a program accredited by NASM. As part of that action, ETSU had agreed to rename the Bluegrass BA to reflect nomenclature not so closely associated with NASM-accredited names. The degree renaming was completed, and this recommended concentration name change is to bring the concentration into greater alignment with the degree program. The concentration will be renamed to Audio Production.

Each of the following three (3) concentration name changes are associated with the same effort to meet the request of NASM to use nomenclature not associated with NASM-accredited music programs:

Concentration Name Change - Bluegrass Music Profession to Bluegrass Profession

Concentration Name Change - Old-Time Music to Old-Time Music Studies

Concentration Name Change - Scottish and Irish Traditional Music to Scottish and Irish Traditional Music Studies

Establish New Concentration in an Existing Program:

Establish New Concentration in an Existing Program - BBA Management Hospitality and Tourism Concentration

Hospitality and tourism have become increasingly important and have significantly impacted the growth of local and regional economies. Some of the main benefits of hospitality tourism are regional reputation, income creation, development of job opportunities, and overall economic growth. Offering the concentration will benefit the region, the University, and students. Interviews with local professionals in the hospitality and tourism industry helped to drive the concentration's development, as well as expressed student interest in this cross-disciplinary opportunity.

Establish New Concentration in an Existing Program - MS Engineering Technology Robotics, Automation and instrumentation Systems Concentration

The Engineering Technology MS has been a stand-alone degree with no concentrations. With increasing employment opportunities in specific areas of engineering technology, new concentrations for this degree are being proposed. The degree will now have a core and an option for students in two areas. The existing degree had courses already specific to robotics, automation, and instrumentation systems. Therefore, the MS Engineering Technology degree with a concentration in Robotics, Automation and Instrumentation Systems will be represented by a program of study that is very similar to the prior degree without concentrations. This new concentration name is consistent with course content in the degree program.

Establish New Concentration in an Existing Program - MS Engineering Technology Construction and Data Analytics Concentration

The second concentration to be added to the Engineering Technology MS is in response to tremendous growth in the use of modern digital tools and technology in the construction industry. Responding to the need for higher levels of training in this area, a concentration in Construction and Data Analytics is being added to this program. To complete this concentration, three new courses: Digital Construction and Project Delivery; Building Information Modeling; Construction Data Analytics were developed for this concentration.

Establish New Concentration in an Existing Program – Child Life BS Human Services

The Child Life Concentration was proposed to facilitate student opportunities to pursue certification in child life. The department has the support, faculty, and coursework to create a concentration that leads to certification. Collaboration with both Niswonger Children's Hospital in Johnson City and East Tennessee Children's Hospital in Knoxville will facilitate student professional preparation for this field. This concentration will allow students to complete the required course competencies for the Association of Child Life Professionals certification.

Academic Program Name Change:

Change Name/Title of Academic Program - Master of Arts Liberal Studies to MALS Interdisciplinary Studies

This name change is part of a broader effort to refresh the perceptions of this degree. The updated title is more contemporary and connected to student inquiries regarding interdisciplinary degree opportunities. It is expected that changing the program name will enable a more accurate representation of the diverse range of study options associated with academic integration and interdisciplinary studies.

Terminate Academic Program or Concentration:

Terminate Academic Concentration – Counselor Leadership

Following discussions with the faculty in Counseling and Educational Leadership, it was decided that the concentration was not sustainable. Interest in the program has been in steady decline over the last few years, which has led to difficulties in both offering very low enrollment courses and in finding faculty to teach in the concentration. This program did not lead to licensure in counseling and was less desirable to students interested in School Counseling as a profession. A teach-out plan has been established for the few students currently enrolled.

Part II: ETSU Approval items

These curriculum items are fully vetted through ETSU curriculum approval processes and are fully approved at the university level. The following table outlines the ETSU academic action items for the period of January 1, 2023, through July 31, 2023:

Type of Action – University-Level Approval	***Quantity***
Revise Program Policy: Admission	7
Revise Program Policy: Progression	5
Revise Program Policy: Graduation	1
Revise Curriculum Substantive	4
Establish Minor	2
Minor Name Change	2
Establish Articulation Agreement	1
Revise Articulation Agreement	1

Items identified in the table above are represented by the following curriculum descriptions:

Revise Program Policy - Admission:

Revise Program Policy (Admission) - Educational Leadership EdD Higher Education Concentration

As part of the existing admissions process, applicants were required to submit letters of recommendation. It is not uncommon for applications to be delayed because of missing letters of recommendation. The applicant usually has little to no control over when or whether someone will submit the recommendation. Additionally, letters of recommendation have become a lesser value element in the admission rubric and other factors weigh more heavily. By removing this admission requirement, program admission will be more efficient and timelier. Students will now be required to submit three references with contact information, so references can be contacted in cases where there is a need for additional verification of student qualifications.

The same justification was used in the following four program policy proposals:

Revise Program Policy (Admission) - Educational Leadership EdD School Leadership Concentration

Revise Program Policy (Admission) - Educational Leadership EdS School System Leadership Concentration

Revise Program Policy (Admission) - Higher Education Teaching Certificate

Revise Program Policy (Admission) - Community College Leadership Certificate

Revise Program Policy (Admission) - BA Music Concentrations Composition, Music History, Performance, Contemporary Music Performance

This policy revision is to ensure that students are not able to audition for admission to the department more than three times. This standard has been in place, but the policy language was not clear, and this revision makes audition limits clear across all concentrations – Composition, Music History, Performance, Contemporary Music Performance.

Revise Program Policy (Admission) – BM Music Concentrations Performance, Music Education

This revision is to ensure that students are not able to audition for admission to the department more than three times. This standard has been in place, but the policy language was not clear and this revision makes audition limits clear across all concentrations – Performance, Music Education.

Revise Program Policy – Progression:

Revise Program Policy (Progression) – Dental Hygiene Traditional and Online Completion

This policy revision will allow students in Dental Hygiene to progress in the program with a minimum grade of C- in Anatomy and Physiology, Microbiology, and Chemistry. This will make this program more aligned with similar programs and with other programs in the Department of Allied Health Sciences.

Establish Program Policy (Progression) – Nursing Post-DNP Adult/Gerontological Nurse Practitioner

The College of Nursing currently has a progression policy for nursing graduate students in nursing degree programs. This proposal is to add the same progression policy to graduate nursing certificates. This will provide consistency across programming for all graduate nursing students.

The same proposal rationale and progression policy was applied to each of the following nursing graduate certificates:

Establish Program Policy (Progression)– Nursing Post-Graduate Family Nurse Practitioner

Establish Program Policy (Progression) – Nursing Post-Graduate Administration

Establish Program Policy (Progression) – Nursing Post-Graduate Psychiatric Mental Health Nurse Practitioner

Revise Program Policy – Graduation:

Revise Program Policy (Graduation) - MS Allied Health

This policy revision will establish a non-thesis path for program completion. Students selecting the non-thesis path will have a 6-credit Advanced Practice Seminar.

Revise Curriculum Substantive:

Revise Curriculum: Substantive - Digital Game Design Concentration

This curriculum revision addresses the need for students to focus on specific industry skill sets associated with game design. Within the concentration, there will now be two pathways for students. One will include a content focus on game designing, creating video game assets, and designing video game elements. A second content focus area is associated with game development, incorporating coding, sound effects, game testing and engineering.

Revise Curriculum: Substantive - Digital Media Major BS Digital Animation Concentration
This curriculum revision will make it easier for students who are interested in 2D animation production to focus on a 2D animation curriculum with options for additional electives in this area. This change is based on feedback from program alumni and student interest in 2D animation as a focus area.

Revise Curriculum: Substantive - Digital Media Major BS Digital Visual Effects Concentration
This curricular revision includes two new courses in Motion Graphis and Modeling and Effects Simulation. The revision to this concentration will allow students to enhance their skills in this highly marketable area. There is no change in total program credits.

Revise Curriculum: Substantive - Digital Media Major BS Digital Visualization Concentration
Increasing student interest in the field of Entertainment Art such as production artwork used in games, movies, animations, TV shows, and similar forms of visual entertainment has resulted in a proposed curriculum revision to this concentration that will allow students to focus on content in this area. This revision will include new courses in the area(s) of Concept Art, Storyboarding, and Visualization Projects. This revision will not result in a change in program credits.

Establish Minor:
Establish Minor - Synthetic Biology
This new academic minor will provide students with opportunities to engage with synthetic biology content. This is an initial step to develop a board portfolio of synthetic biology and bioengineering programs at ETSU. This interdisciplinary minor is designed to provide added credentials, knowledge, and skills to make students competitive for jobs and graduate programs in synthetic biology.

Establish Minor – Forensic Science
Forensic science has become largely popular as an academic discipline over the past several years. Students interested in this field are generally attracted to those colleges that offer a program in forensic science. Many of ETSU's peer institutions offer forensic science major and minor programs of study. This 18-credit minor will be a positive addition to ETSU offerings and keep ETSU competitive in forensic science offerings.

Minor Name Change:
Minor Name Change - Old-Time Music Minor to Old-Time Music Studies Minor
The National Association of Schools of Music (NASM) issued an action report to certify that ETSU's BA in Bluegrass, Old-Time, and Country Music Studies is an Appalachian Studies major and not a program accredited by NASM. As part of that action, ETSU had agreed to rename the Bluegrass BA to reflect nomenclature not so closely associated with NASM-accredited names. The degree renaming was completed, and this recommended minor name change is to bring the concentration in greater alignment with the degree program. The concentration will be renamed Old-Time Music Studies Minor.

Establish Articulation Agreement:

Establish Articulation Policy – Masters of Public Health in Public Health Leadership and Policy with articulation to Health Care Management Certificate and Health Data Analytics Certificate

This articulation agreement allows students enrolled in the Master of Public Health in Public Health Leadership and Policy the option to transfer credits from three different certificates including the Health Care Management Certificate, Public Health Certificate, and Health Data Analytics Certificate to the Master of Public Health in Public Health Leadership and Policy.

Revise Articulation Agreement:

Revise Articulation Agreement – MD/MPH

This articulation revision is to add the new concentration in Public Health Leadership and Policy to the already existing MD/MPH articulation agreement. With this revision, all the MPH concentrations offered online will be included in the MD/MPH articulation agreement.

EAST TENNESSEE STATE UNIVERSITY
BOARD OF TRUSTEES

INFORMATION ITEM

DATE:	September 15, 2023
ITEM:	Provost's Update
COMMITTEE:	Academic, Research, and Student Success
PRESENTED BY:	Dr. Kimberly D. McCorkle Provost and Senior Vice President for Academic Affairs

Provost McCorkle will provide an update to the Board on initiatives underway across the Division of Academic Affairs for the upcoming academic year. After finalizing the updates to the ETSU strategic planning process and identifying the priority areas of focus, the division is leading collaborative initiatives related to reviewing academic college structure, redesigning the general education curriculum, expanding community-engaged learning opportunities, increasing the research focus, growing regional partnerships, and targeting curriculum development in areas related to workforce demand.

EAST TENNESSEE STATE UNIVERSITY

Provost Update
ETSU Board of Trustees
Academic, Research, and Student Success Committee

Dr. Kimberly D. McCorkle

September 15, 2023

Agenda

- Academic Administration
- Academic Programs & Curriculum
- Research & Scholarship
- Faculty Affairs
- Going Beyond

Academic Administration

Ensuring a High-Quality Education

- **Academic Structure Task Force**
  - Designing an academic structure that more efficiently serves the students, faculty, staff, community, and mission of ETSU.
  - Through a review of data and with input from students, staff, faculty, and leadership developed potential models that will be evaluated this semester
- **Academic Policy Review**
  - This year ETSU will complete the review of 79 Academic Policies
- **Accreditation 2023-24**
  - Music - National Association of Schools of Music (NASM)
  - Physical Therapy – Commission on Accreditation in Physical Therapy Education (CAPTE)
  - Nursing – Commission on Collegiate Nursing Education (CCNE)

Academic Programs and Curriculum

Expanding Minds and Opportunity

- New Academic Programs
  - Synthetic Biology
    - Appointment of Dr. Aruna Kilaru as the Faculty Fellow for Interdisciplinary Innovation and Synthetic Biology Workgroup Lead
  - Bio-Engineering
    - In development
  - Mechatronics
    - At the Tennessee Higher Education Commission for approval
- New Program Pathways
  - Academic Partnerships
    - Partnership to expand access to the Master's of Business Administration
- General Education Redesign Task Force
  - Six competencies and associated learning outcomes identified
  - Fall 2023– work with faculty to design the curriculum
  - Spring 2024 – Begin Implementation

Research & Scholarship

Advancing Research and Scholarship

- Events to promote research participation and foster interdisciplinary collaboration:
  - ETSU Trailblazer Series
  - New Faculty 3-Minute Mixer
- Launching the first cohort of the Trail Guide Research Mentorship Program
  - 22 participants from seven colleges
- Chief Research Officer, Dr. Nick Hagemeier, selected as an Association of Public & Land Grant Universities (APLU) Research Leader Fellow

$70 million
In Sponsored Projects Awarded for FY22

$22.1 million
Federal Awards in FY22

$23.3 million
In Research and Development Expenditures in FY22

Faculty Affairs

Faculty Excellence

- Distinguished Faculty Awards 2023
  - Research Award Winner: Dr. Dawn Rowe the *James H. Quillen Chair of Excellence in Teaching and Learning, Clemmer College of Education and Human Development*
  - Teaching Award Winner: *Dr. Jessica Burchette an Associate Professor, Department of Pharmacy Practice, Gatton College of Pharmacy*
  - Service Award Winner: Dr. Dorothy Saxon Greene an *Associate Professor, Department of Social Work, College of Clinical and Rehabilitative Health Sciences*
- This fall ETSU welcomed 121 new faculty, who were provided a the first of four challenge coins they earn throughout their career at ETSU

Going Beyond

Going Beyond

- 2023 Campus Read
  - The campus has selected:
    - *The War For Kindness: Building Empathy In a Fractured World by: Jamil Zaki*
  - *Going Beyond The Classroom:* Community Engaged Learning (QEP)
    - The Office of Community Engagement announced a new Community-Engaged Learning (CEL) designation for courses that provide students with community-engaged learning experiences
- 414 Students Participated in Study Abroad
  - 30 Countries visited from Barbados to Zambia
  - 14 fields of study
    - Biology, Digital Media, English, Geosciences, Global Sport Leadership, Health Sciences, Interior Architecture, Media & Communications, Microbiology, Nursing, Political Science, Psychology, Public Health, Quillen College of Medicine
  - 83% of students participated in a faculty led program

Questions

Dr. Kimberly D. McCorkle
East Tennessee State University
Provost & Senior Vice President
for Academic Affairs

EAST TENNESSEE STATE UNIVERSITY
BOARD OF TRUSTEES

INFORMATION ITEM

DATE:	September 15, 2023
ITEM:	Tennessee Climate Office Presentation
COMMITTEE:	Academic, Research, and Student Success
PRESENTED BY:	Dr. Andrew Joyner Associate Professor, Geosciences Tennessee State Climatologist Wil Tollefson Lecturer, Geosciences Tennessee State Climatologist

The Tennessee Climate Office (TCO), which is part of the ETSU Department of Geosciences, serves as the official climate office for the state of Tennessee. Dr. Joyner and Mr. Tollefson will provide an overview of the initiatives underway in the TCO. They will discuss the services that the state office provides including sharing data, event histories, archival information, and coordination support on extreme events and hazard mitigation. The impactful work of the TCO is supported by substantial grant funding by the Federal Emergency Management Association (FEMA), the Tennessee Emergency Management Association (TEMA), and the Tennessee Department of Transportation.

The Tennessee Climate Office

Andrew Joyner, PhD
Associate Professor, Geosciences
TN State Climatologist

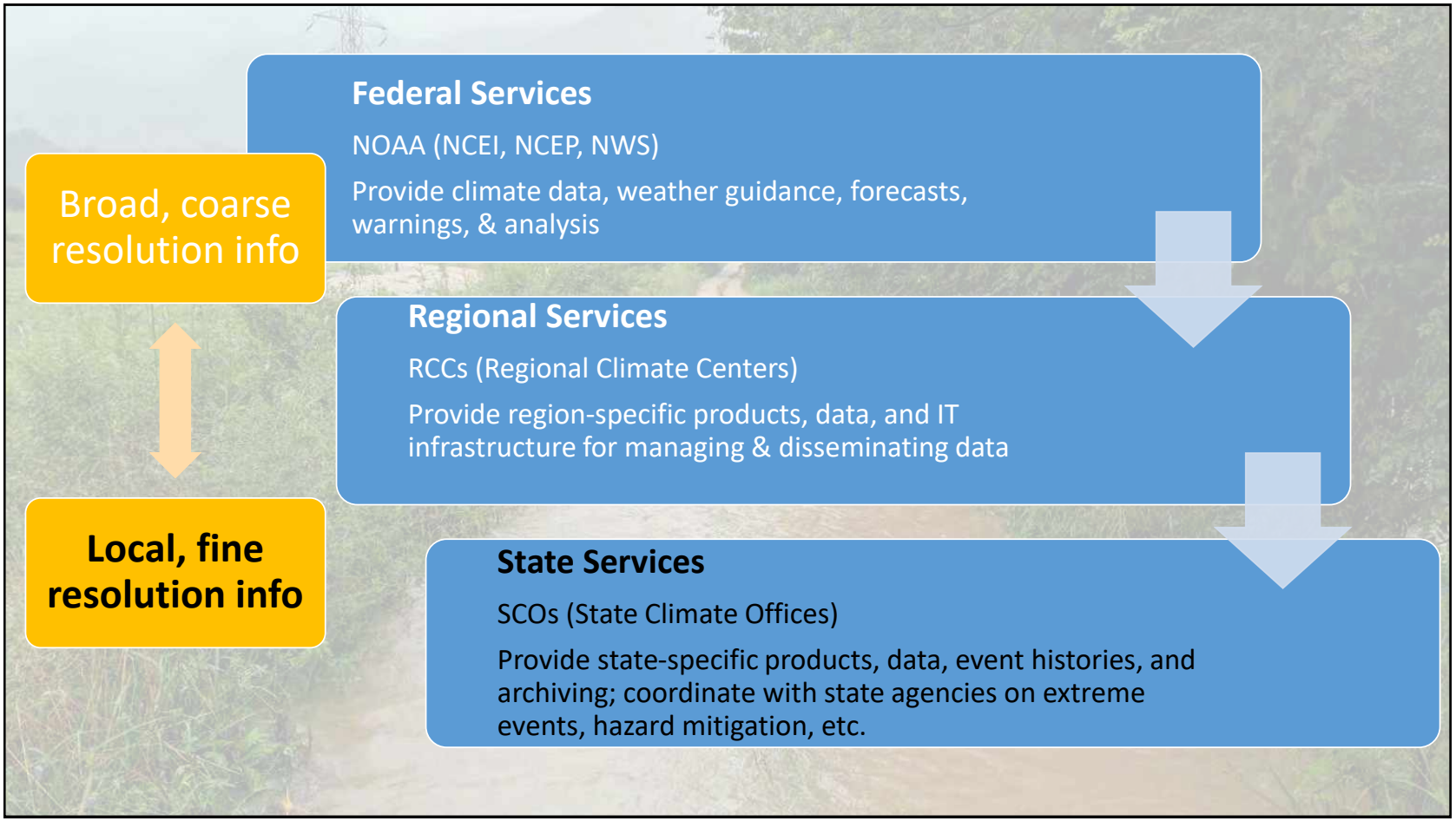
Wil Tollefson
Lecturer, Geosciences
TN Assistant State Climatologist

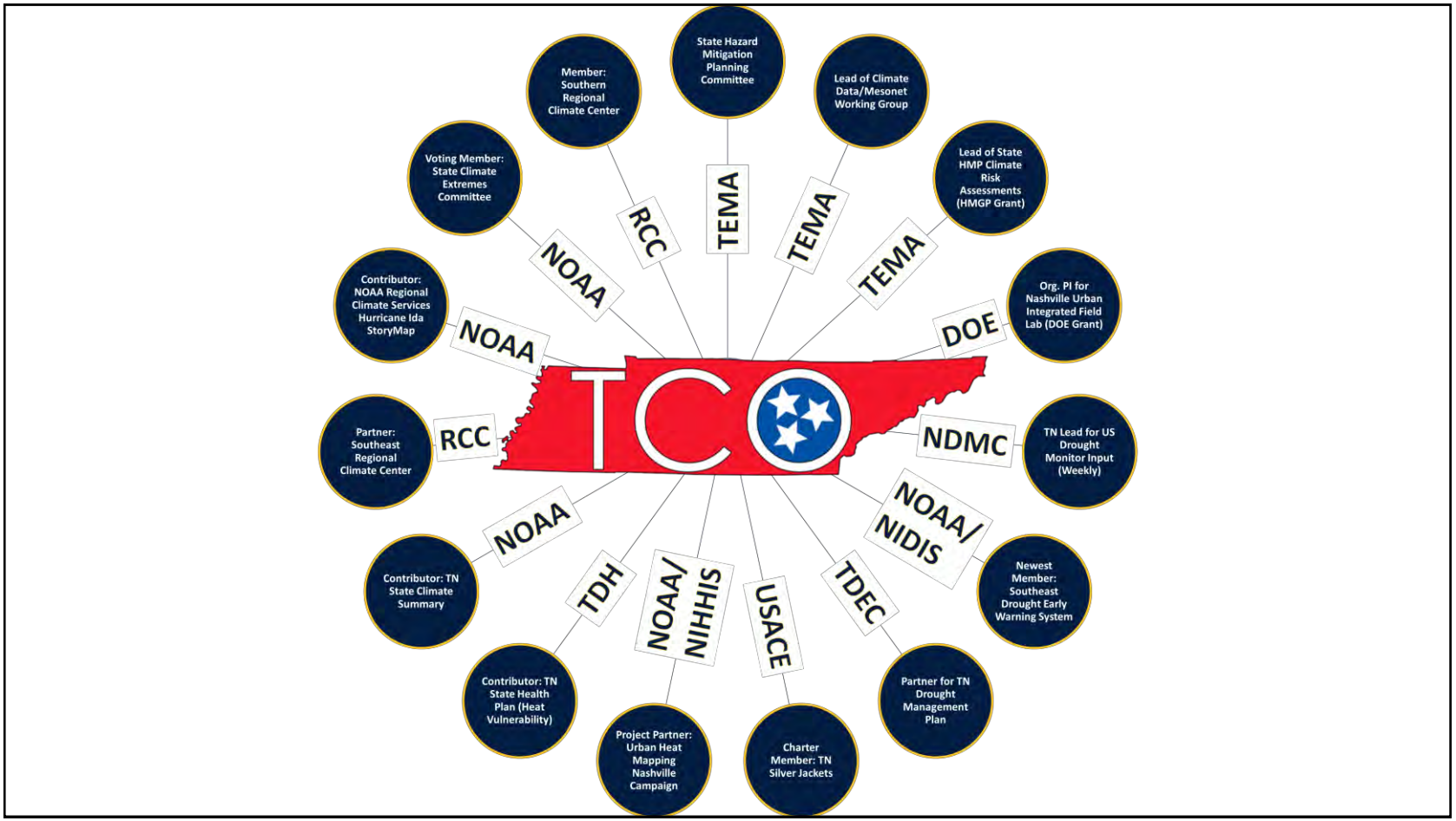
DEPARTMENT *of* GEOSCIENCES
College of Arts & Sciences
EAST TENNESSEE STATE UNIVERSITY

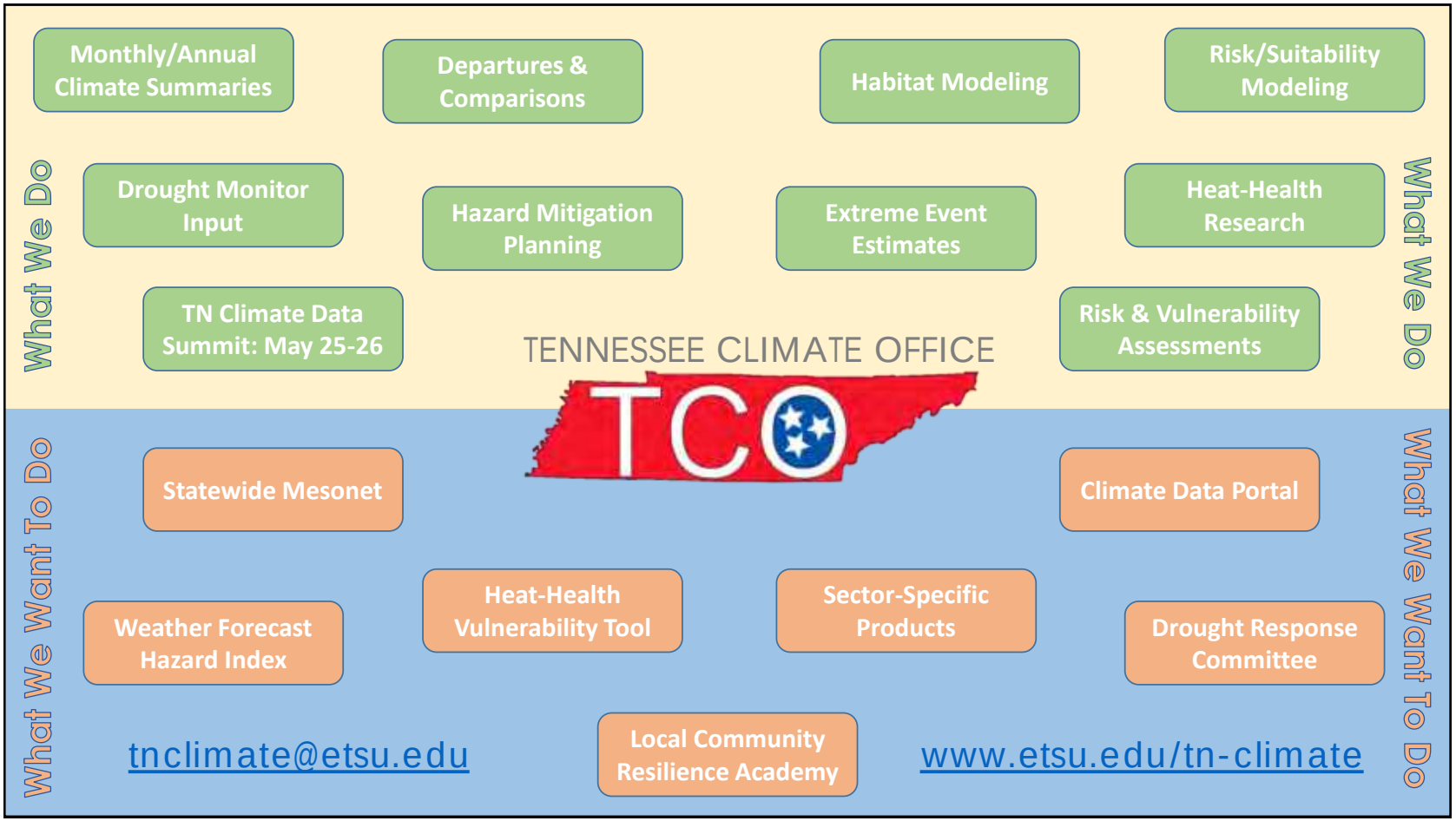
Website: www.etsu.edu/tn-climate

Email: tnclimate@etsu.edu


Registration for the AASC Annual Meeting Is Open!
AASC Mesonet Committee Members Published in AMS Journal
The Tennessee State Climate Office Gains Official Recognition
TCO
LEGEND


Federal Services
NOAA (NCEI, NCEP, NWS)
Provide climate data, weather guidance, forecasts, warnings, & analysis
Broad, coarse resolution info
Regional Services
RCCs (Regional Climate Centers)
Provide region-specific products, data, and IT infrastructure for managing & disseminating data
Local, fine resolution info
State Services
SCOs (State Climate Offices)
Provide state-specific products, data, event histories, and archiving; coordinate with state agencies on extreme events, hazard mitigation, etc.


TC
State Hazard Mitigation Planning Committee
TEMA
Lead of Climate Data/Mesonet Working Group
TEMA
Lead of State HMP Climate Risk Assessments (HMGP Grant)
TEMA
Org. PI for Nashville Urban Integrated Field Lab (DOE Grant)
DOE
TN Lead for US Drought Monitor Input (Weekly)
NDMC
Newest Member: Southeast Drought Early Warning System
NOAA/ NIDIS
Partner for TN Drought Management Plan
TDEC
Charter Member: TN Silver Jackets
USACE
Project Partner: Urban Heat Mapping Nashville Campaign
NOAA/ NIHHIS
Contributor: TN State Health Plan (Heat Vulnerability)
TDH
Contributor: TN State Climate Summary
NOAA
Partner: Southeast Regional Climate Center
RCC
Contributor: NOAA Regional Climate Services Hurricane Ida StoryMap
NOAA
Voting Member: State Climate Extremes Committee
NOAA
Member: Southern Regional Climate Center
RCC


Monthly/Annual Climate Summaries
Departures & Comparisons
Habitat Modeling
Risk/Suitability Modeling
What We Do
Drought Monitor Input
Hazard Mitigation Planning
Extreme Event Estimates
Heat-Health Research
What We Do
TN Climate Data Summit: May 25-26
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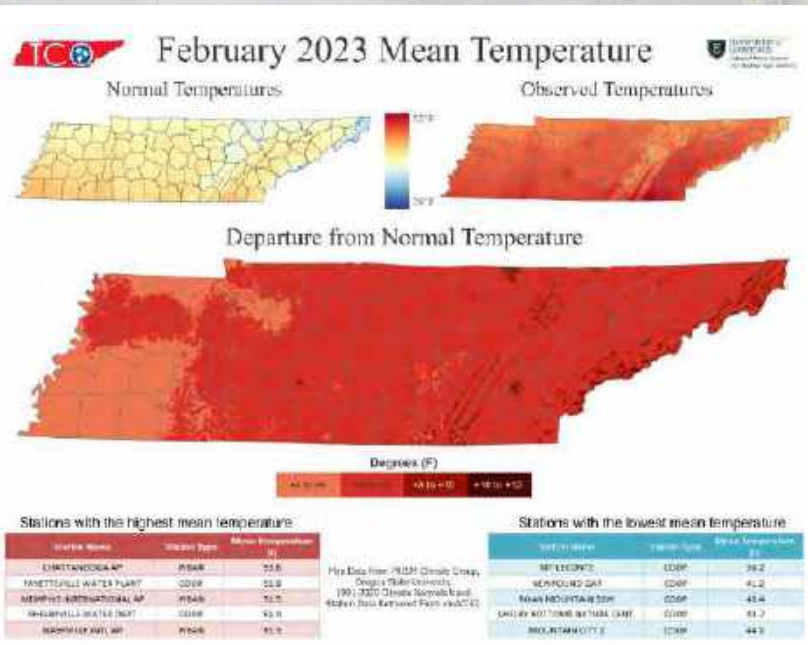
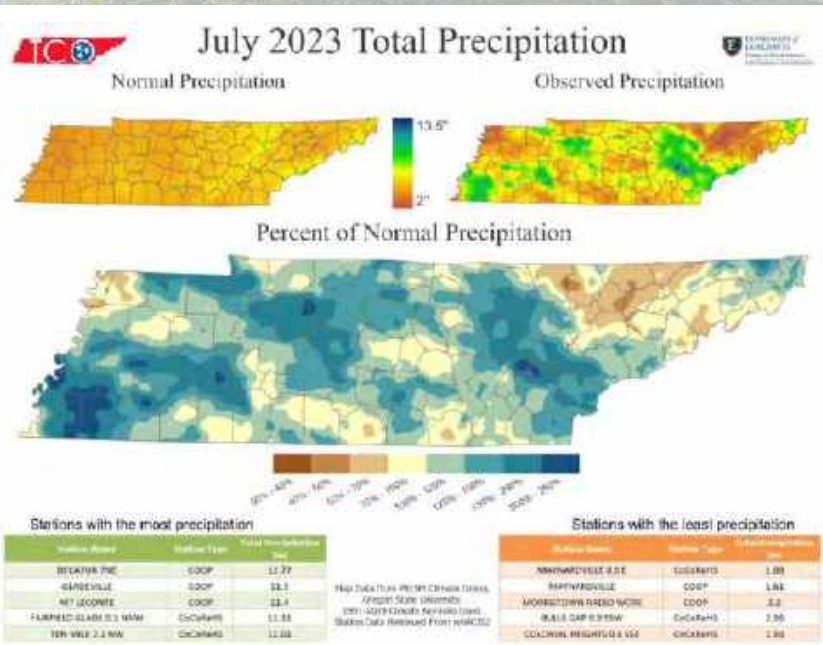
What We Want To Do
Statewide Mesonet
Climate Data Portal
What We Want To Do
Heat-Health Vulnerability Tool
Sector-Specific Products
Weather Forecast Hazard Index
Drought Response Committee
tnclimate@etsu.edu
Local Community Resilience Academy
www.etsu.edu/tn-climate

Monthly/Annual Climate Summary Reports

Include departures from average, storm reports, crop reports, soil moisture, drought status/degradation, streamflow, fire potential, event summaries, & next month outlook



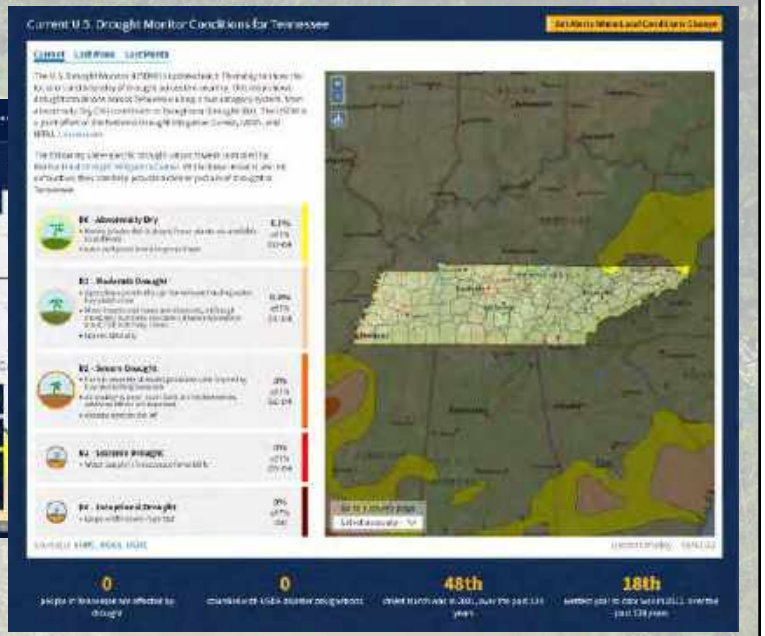


Distributed to state agencies, emergency managers, farmers, & researchers, submitted to Southern Regional Climate Center & NOAA NCEI

Website: www.etsu.edu/tn-climate

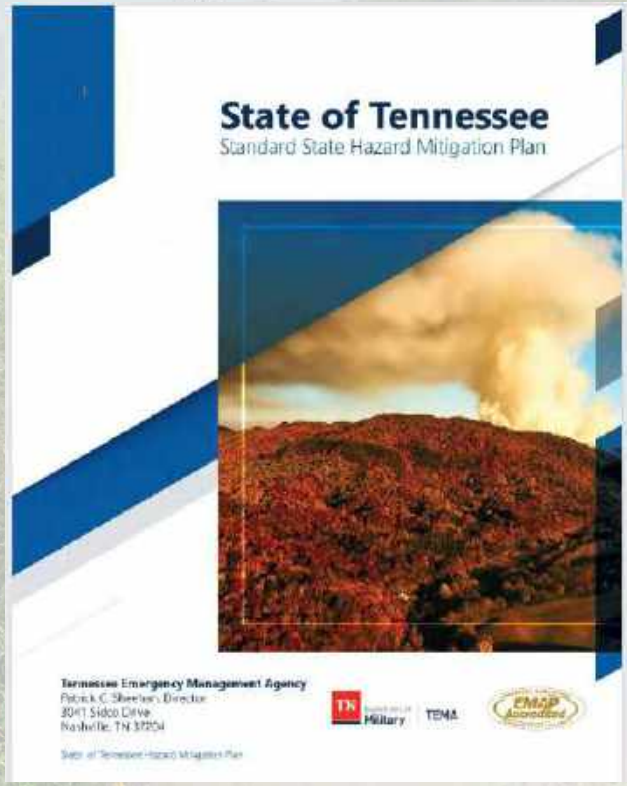
Weekly Drought Monitoring

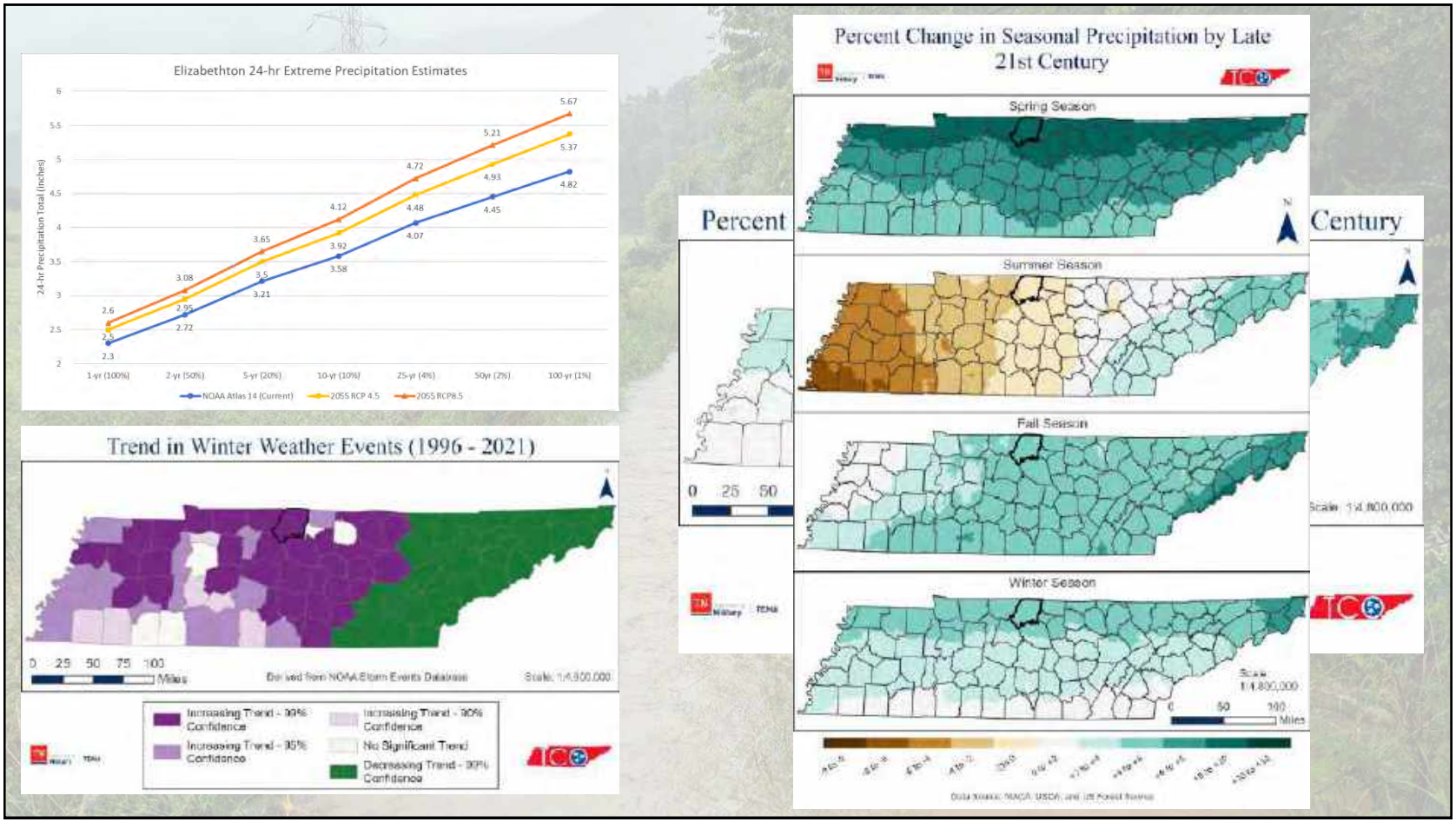
- Tennessee Drought Summary – Example Maps & Tools
- www.drought.gov/states/tennessee



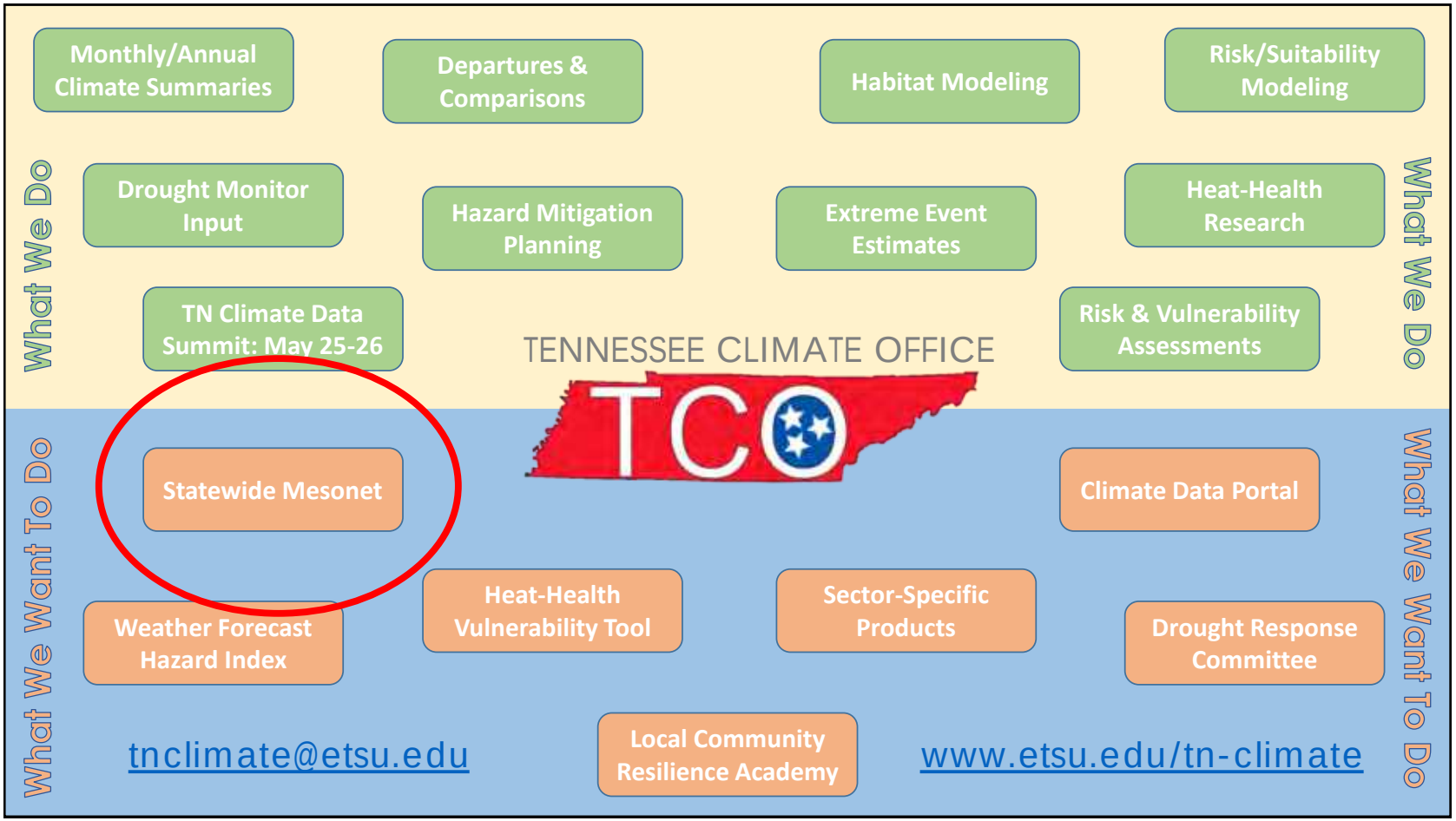
Summer 2022 -> Fall 2022

State Hazard Mitigation Plan




Elizabethton 24-hr Extreme Precipitation Estimates
24-hr Precipitation Total (inches)
1-yr (100%)
2-yr (50%)
5-yr (20%)
10-yr (10%)
25-yr (4%)
50yr (2%)
100-yr (1%)
NOAA Atlas 14 (Current)
2055 RCP 4.5
2055 RCP8.5
Trend in Winter Weather Events (1996 - 2021)
Increasing Trend - 99% Confidence
Increasing Trend - 95% Confidence
Increasing Trend - 90% Confidence
No Significant Trend
Decreasing Trend - 90% Confidence
Percent Change in Seasonal Precipitation by Late 21st Century
Spring Season
Summer Season
Fall Season
Winter Season
Century


NASHVILLE
ANNUAL MEETING
AASC
AMERICAN ASSOCIATION OF STATE CLIMATOLOGISTS
20-23 JUNE 2023
THE WOND'RY @ VANDERBILT
www.stateclimate.org
MEETING HOSTS
20-23 June 2023
TCO
Tennessee Climate Office @ East Tennessee State University
Andrew Joyner & Wil Tollefson
(www.etsu.edu/tn-climate)
DEPARTMENT of GEOSCIENCES
College of Arts & Sciences
EAST TENNESSEE STATE UNIVERSITY
TN Department of Military
TEMA
Tennessee Emergency Management Agency
Megan Schargorodski
(www.tn.gov/tema)
KENTUCKY CLIMATE CENTER
Kentucky Climate Center
Jerry Brotzge
(www.kyclimate.org)
www.stateclimate.org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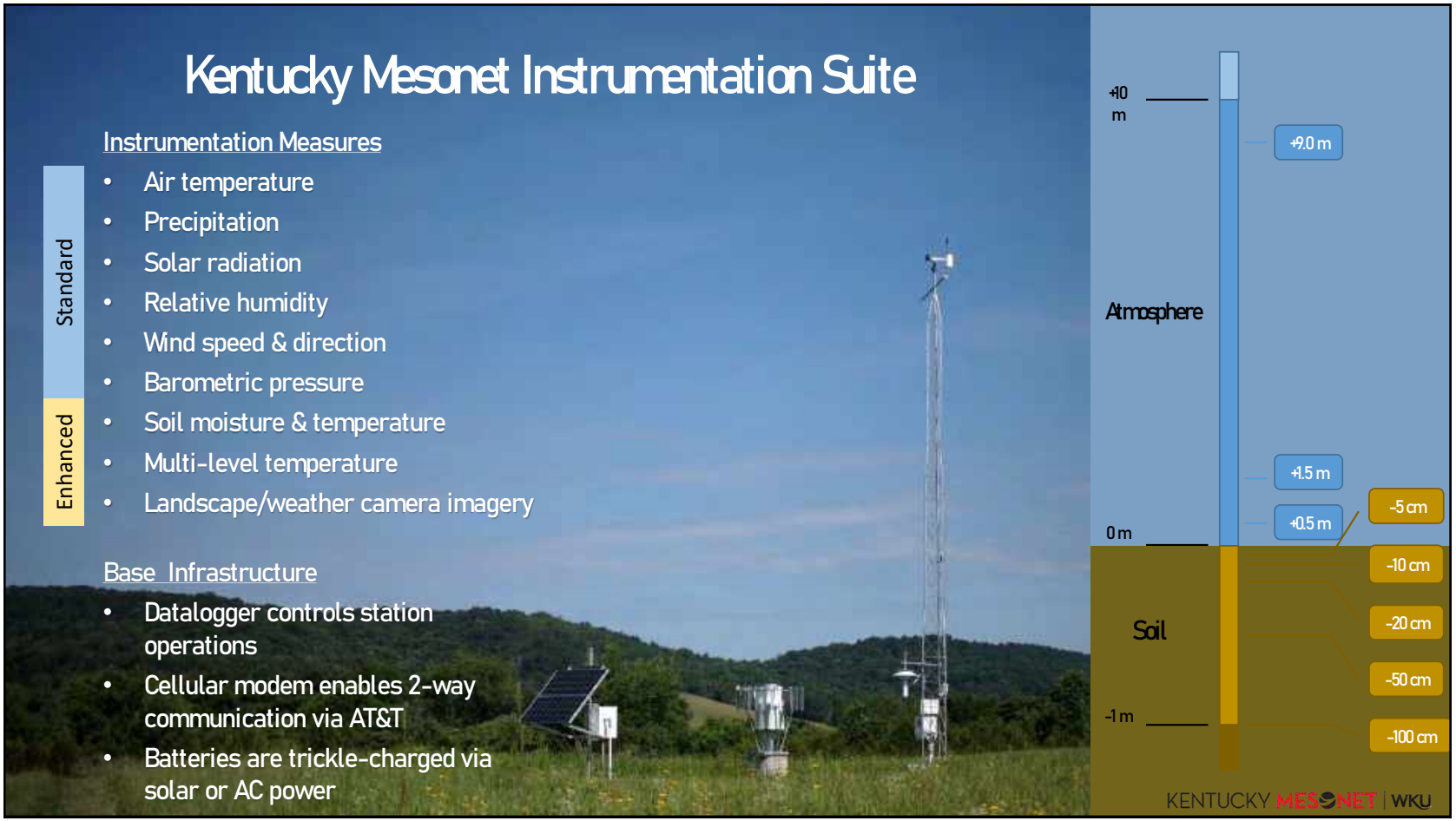
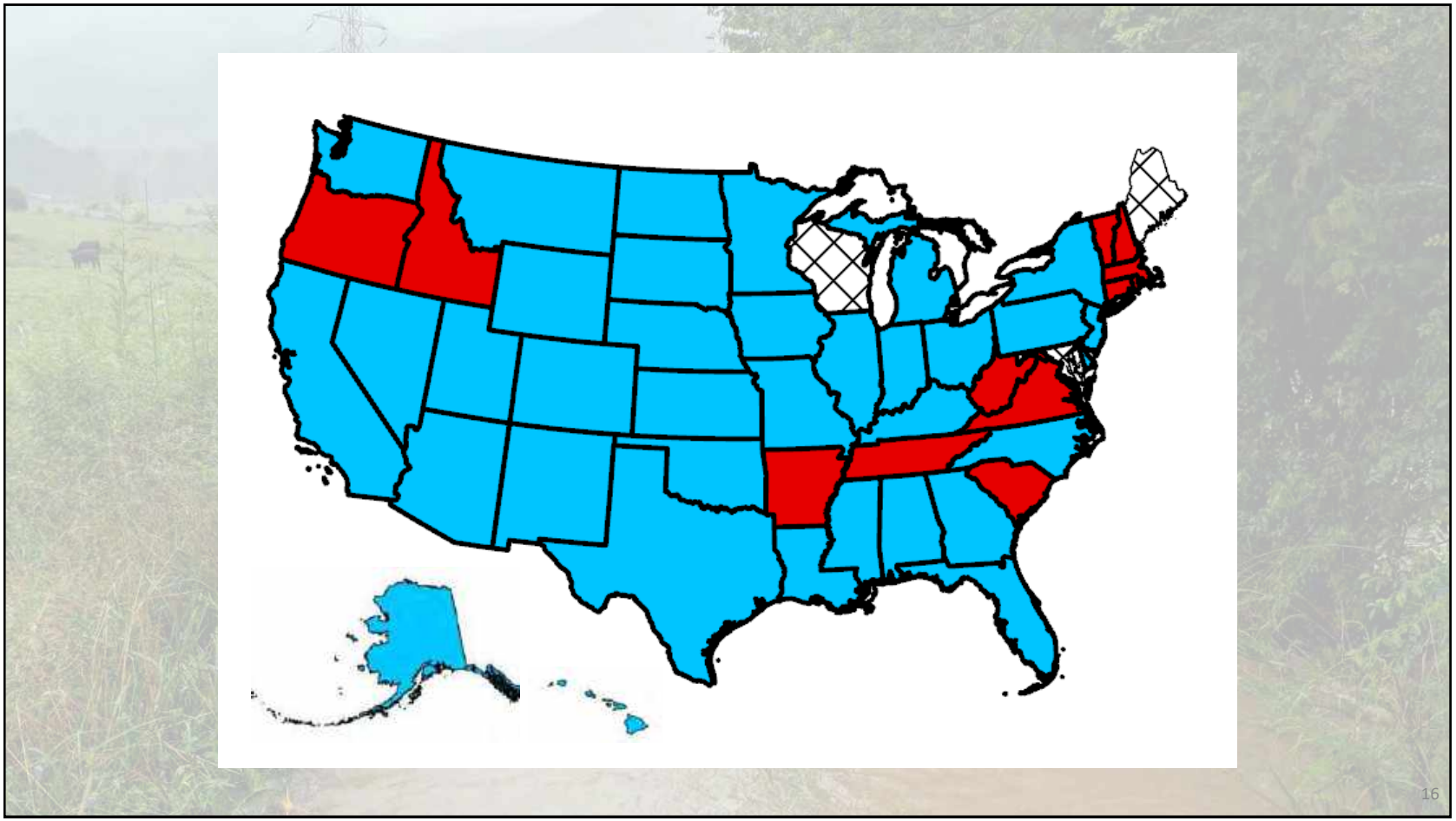
Build a Mesonet

Mesonets serve many purposes and can provide data to a variety of stakeholders who use the data for a myriad of purposes. The data can be used to make decisions in many areas, including the following:

- Agriculture
- Education
- Emergency management
- Energy industry
- Environmental research
- Management of prescribed burns and wildfires
- Transportation
- Weather forecasting


Kentucky Mesonet Instrumentation Suite
Instrumentation Measures
Standard
Air temperature
Precipitation
Solar radiation
Relative humidity
Wind speed & direction
Barometric pressure
Enhanced
Soil moisture & temperature
Multi-level temperature
Landscape/weather camera imagery
Base Infrastructure
Datalogger controls station operations
Cellular modem enables 2-way communication via AT&T
Batteries are trickle-charged via solar or AC power
+10 m
+9.0 m
Atmosphere
+1.5 m
+0.5 m
0 m
-5 cm
-10 cm
Soil
-20 cm
-50 cm
-1 m
-100 cm
KENTUCKY MESONET | WKU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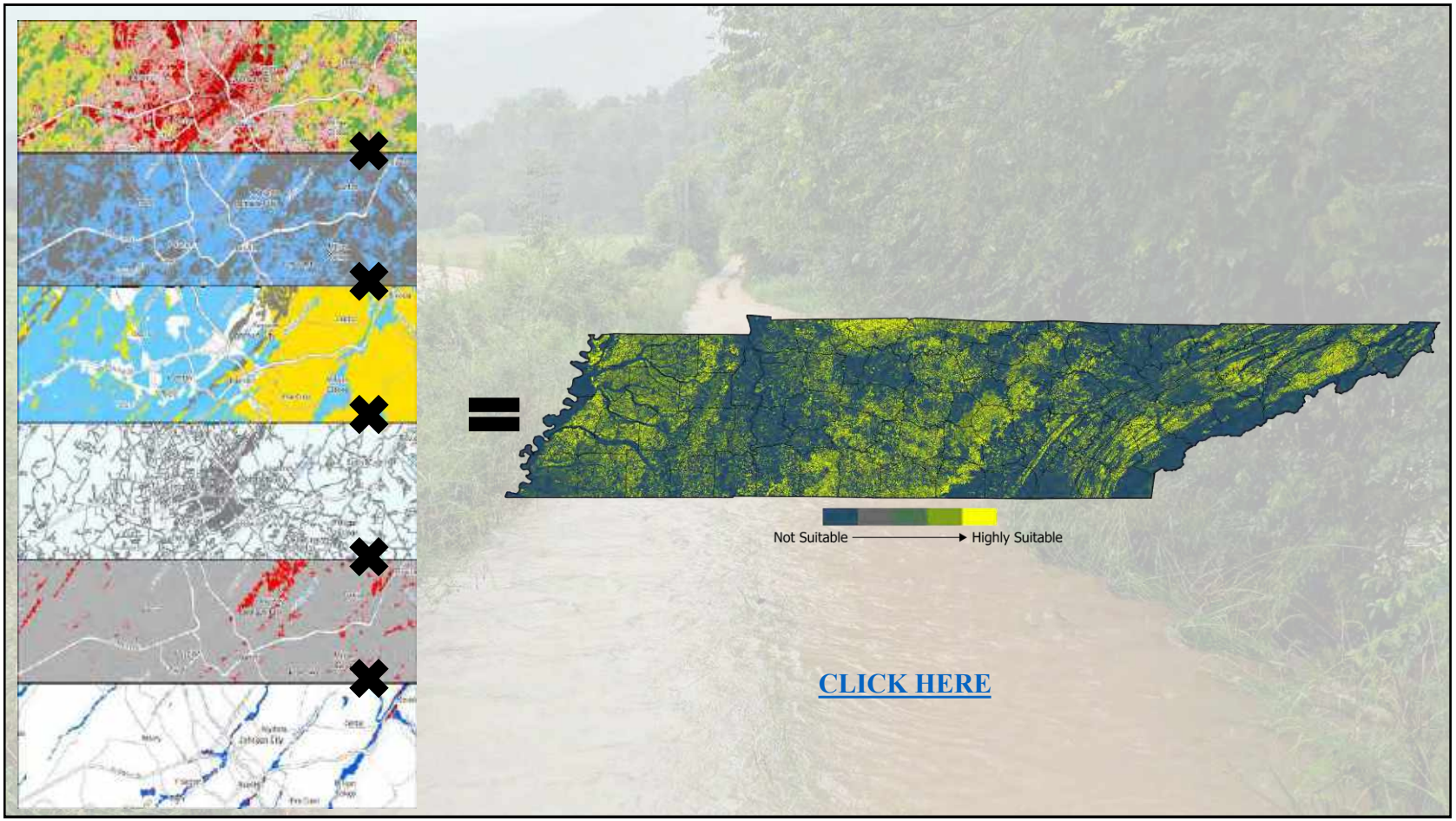
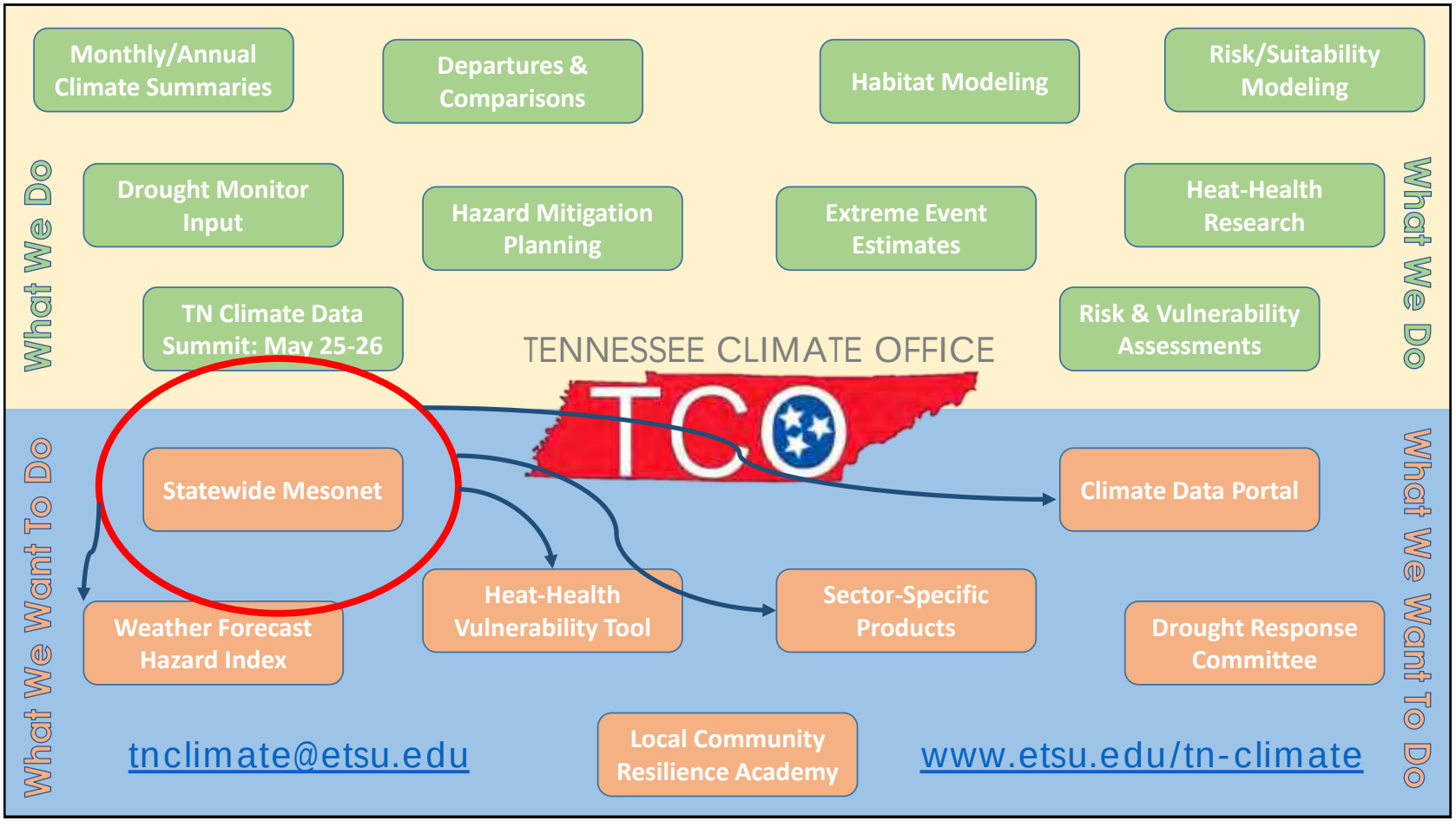

Not Suitable
Highly Suitable
CLICK HERE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HB 0599
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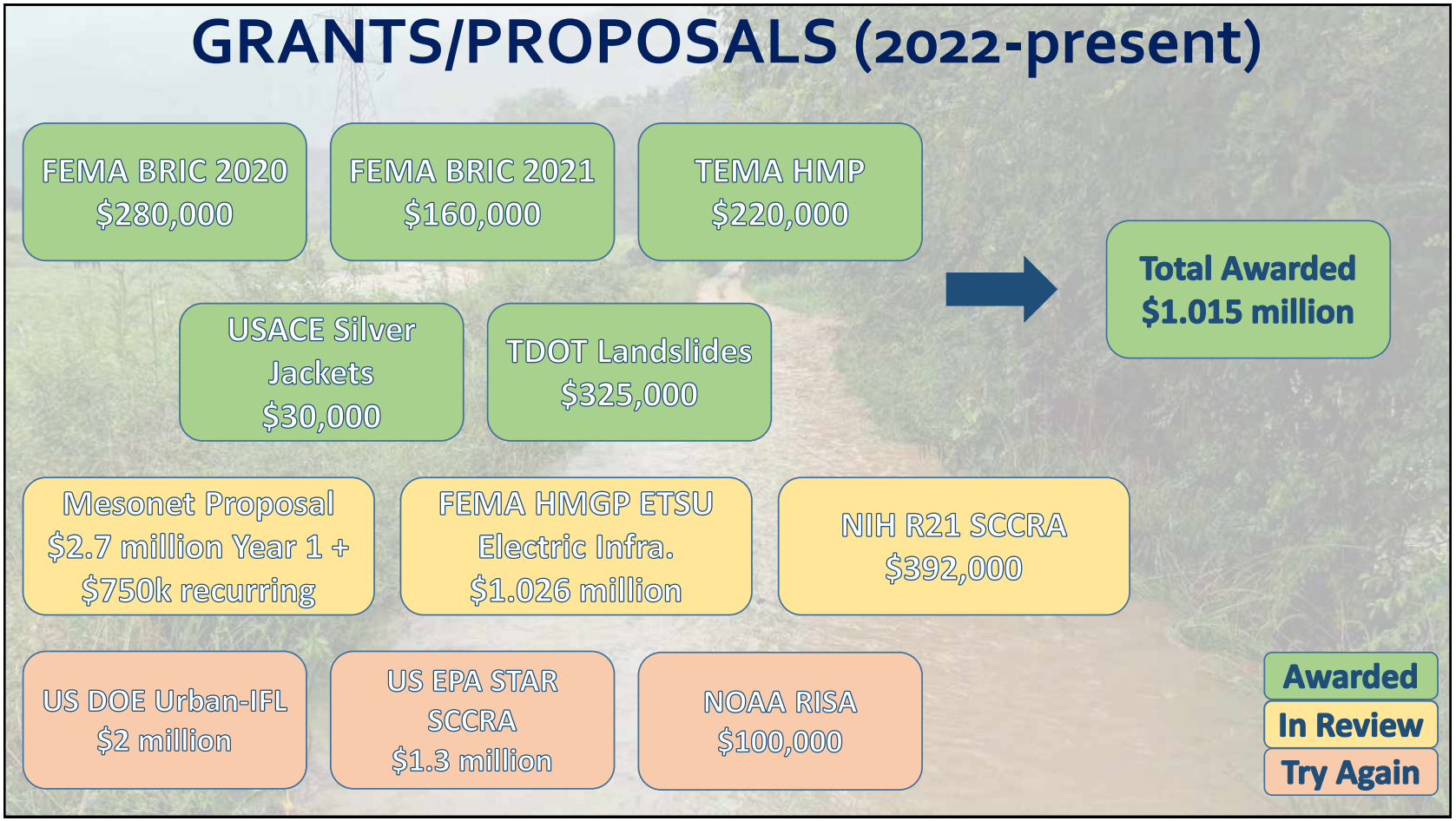
Show Co-Prime Sponsors
(SB 0713)
by *Oliver
Show Co-Prime Sponsors
Show Caption Text
Environment and Conservation, Department of - As introduced, requires the department to collect and publish data concerning landslides and floods; requires the department to establish a network of weather stations across the state. - Amends TCA Title 4, Chapter 3, Part 5; Title 5B; Title 64, Chapter 3; Title 68 and Title 69.
Bill History
Amendments
Video
Summary
Fiscal Note
Votes
HB0599 ACTIONS
DATE
Taken off notice for cal in s/c Finance, Ways, and Means Subcommittee of Finance, Ways, and Means Committee
04/18/2023
Placed on s/c cal Finance, Ways, and Means Subcommittee for 4/18/2023
04/12/2023
Placed behind the budget
04/12/2023
Sponsor(s) Added.
04/11/2023
Placed on s/c cal Finance, Ways, and Means Subcommittee for 4/12/2023
04/05/2023
Assigned to s/c Finance, Ways, and Means Subcommittee
04/05/2023
Rec. for pass. if am., ref. to Finance, Ways, and Means Committee
03/29/2023
Placed on cal. Agriculture & Natural Resources Committee for 3/29/2023
03/22/2023
Rec for pass if am by s/c ref. to Agriculture & Natural Resources Committee
02/21/2023
Placed on s/c cal Agriculture & Natural Resources Subcommittee for 2/21/2023
02/15/2023
Action Def. in s/c Agriculture & Natural Resources Subcommittee to 2/21/2023
02/14/2023
Placed on s/c cal Agriculture & Natural Resources Subcommittee for 2/14/2023
02/08/2023
Assigned to s/c Agriculture & Natural Resources Subcommittee
02/01/2023
P2C, ref. to Agriculture & Natural Resources Committee
02/01/2023
Intro., P1C.
01/30/2023
Filed for introduction
01/26/2023
SB0713 ACTIONS
DATE
Placed on Senate Finance, Ways, and Means Committee calendar for 4/20/2023
04/13/2023
Recommended for passage with amendment/s, refer to Senate Finance, Ways, and Means Committee Ayes 9, Nays 0 PNV 0
03/08/2023
Placed on Senate Energy, Ag., and Nat. Resources Committee calendar for 3/8/2023
03/01/2023
Sponsor(s) Added
02/15/2023
Passed on Second Consideration, refer to Senate Energy, Ag., and Nat. Resources Committee
02/02/2023
Introduced, Passed on First Consideration
01/30/2023
Filed for introduction
01/26/2023


GRANTS/PROPOSALS (2022-present)
FEMA BRIC 2020
$280,000
FEMA BRIC 2021
$160,000
TEMA HMP
$220,000
Total Awarded
$1.015 million
USACE Silver Jackets
$30,000
TDOT Landslides
$325,000
Mesonet Proposal
$2.7 million Year 1 +
$750k recurring
FEMA HMGP ETSU
Electric Infra.
$1.026 million
NIH R21 SCCRA
$392,000
US DOE Urban-IFL
$2 million
US EPA STAR SCCRA
$1.3 million
NOAA RISA
$100,000
Awarded
In Review
Try Again

The Tennessee Climate Office

Andrew Joyner, PhD
Associate Professor, Geosciences
TN State Climatologist

Wil Tollefson
Lecturer, Geosciences
TN Assistant State Climatologist

DEPARTMENT *of* GEOSCIENCES
College of Arts & Sciences
EAST TENNESSEE STATE UNIVERSITY

Website: www.etsu.edu/tn-climate

Email: tnclimate@etsu.edu

EAST TENNESSEE STATE UNIVERSITY
BOARD OF TRUSTEES

INFORMATION ITEM

DATE:	September 15, 2023
ITEM:	Annual ETSU Research Corporation Update
COMMITTEE:	Academic, Research, and Student Success
PRESENTED BY:	David Golden CEO ETSU Research Corporation

David Golden, CEO of the ETSU Research Corporation, will present updates to the Board on recent accomplishments related to building connections between the University and industry partners in order to advance regional prosperity and entrepreneurialism. The presentation will describe the current initiatives including the RC Content Studio, StoryCollab, the Center for Bioindustrial Manufacturing, the Innovation Lab, the Center for Innovation, K-12 initiatives and partnerships, and the Regional Higher ED^2 Council Initiative. The presentation will demonstrate the ways that the ETSU Research Corporation is working to achieve its mission to research, innovate, and active as it helps to expand ETSU's impact in research and innovation across disciplines.

ETSU Research CORPORATION

Enriching the Region, Impacting the World.

ETSU Board of Trustees

Academic, Research, and Student Success Committee

September 15, 2023

David A. Golden, JD

CEO, ETSU Research Corporation

Allen & Ruth Harris Chair of Excellence in Business

Our Team

David A. Golden
CHIEF EXECUTIVE OFFICER

Dave Clark
VP FOR ENTREPRENEURIAL ECOSYSTEM DEVELOPMENT

Eric Jorgenson
VP OF BIOMANUFACTURING DEVELOPMENT

Audrey Depelteau
ETSU INNOVATION LAB DIRECTOR

Bill Heise
RESEARCH CORPORATION FELLOW

Betsy Cunningham
DIRECTOR OF OPERATIONS

Allison Myers
DIRECTOR OF STORYCOLLAB

Stephen Marshall
CMO & DIRECTOR OF THE RC CONTENT STUDIO

Mark Bays
DIRECTOR FOR THE SMALL BUSINESS DEVELOPMENT CENTER AND STRIVE

Emily Colvin
ETSU INNOVATION LAB ASSISTANT DIRECTOR

Maame Aba Afful
BRAND STRATEGY GRADUATE ASSISTANT

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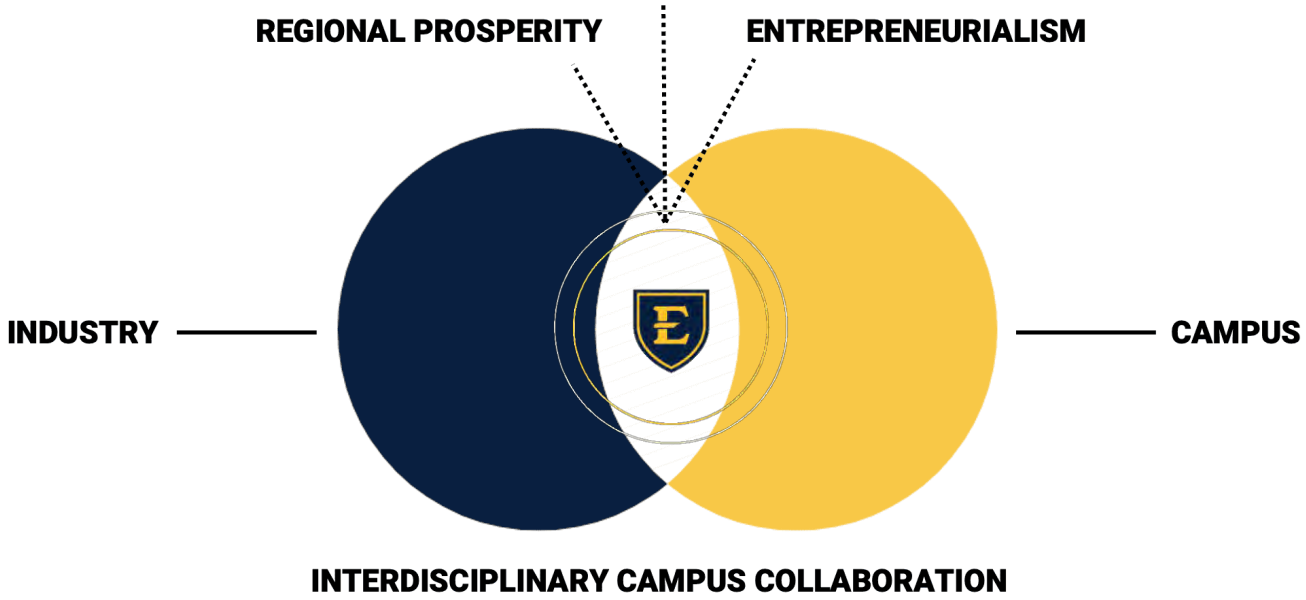
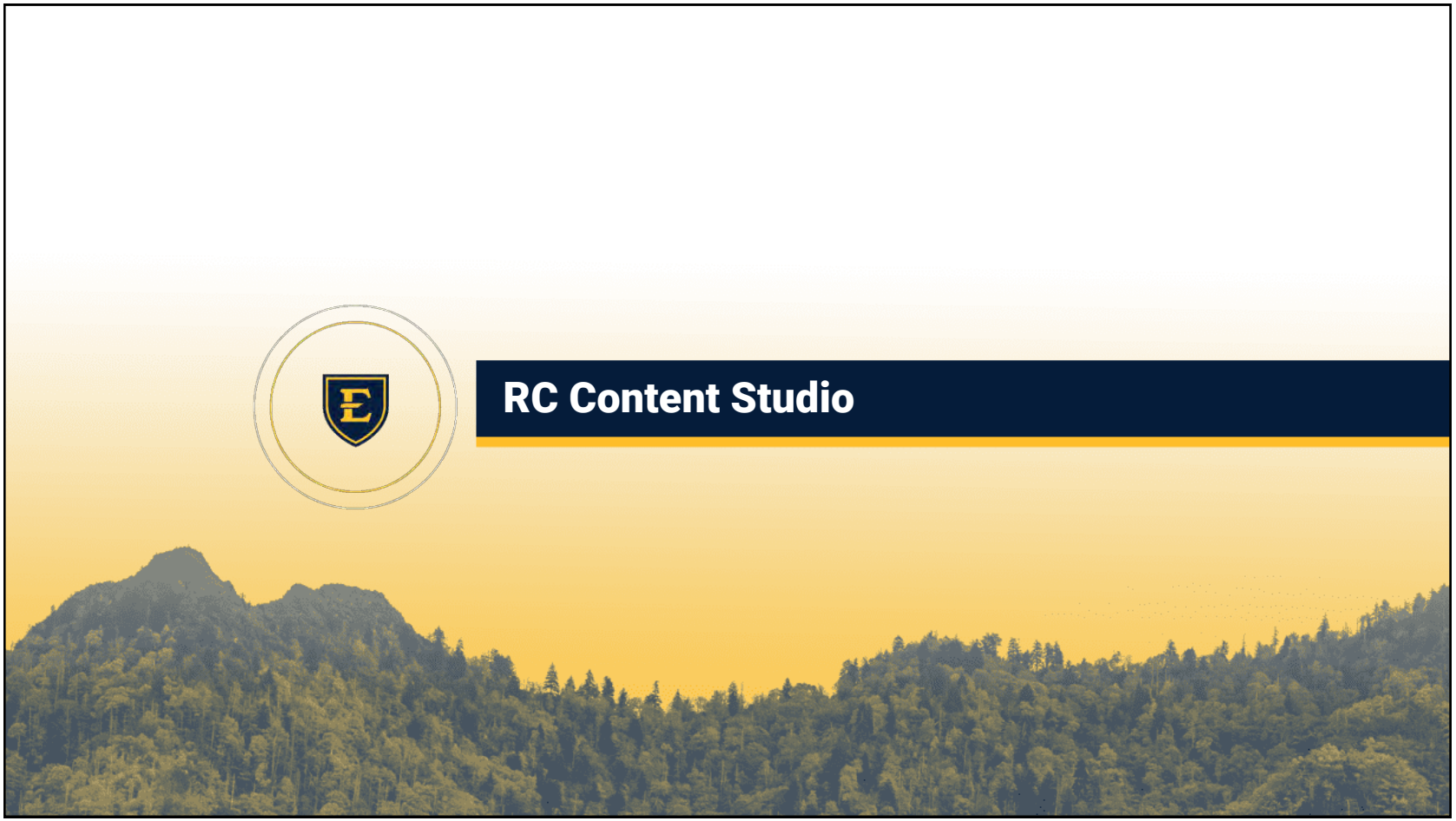
2

World-Class in a Rural Setting



RESEARCH | INNOVATE | ACTIVATE


RC Content Studio

Media and Marketing Experiential Learning

RC CONTENT STUDIO

A collaborative student/professional content engine highlighting regional stories around research, innovation, and life in the Appalachian Highlands.

Industry Advisors

Ty Warren
Production

Clay Prewitt
Creative

Chusy
Filmmaking

Scott Andrew
Entrepreneurialism

Jason Thompson
Analytics

Allison Myers
Storytelling

The mission of the *RC Content Studio* is to provide elite students the opportunity to apply theory and build skills to get them hired.

Self-funded business model.

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Media and Marketing Experiential Learning

RC CONTENT STUDIO

CURRENT INITIATIVES

RC Campaigns: Support of the RC with UMC collaboration on marketing initiatives.

Local View Appalachian Highlands: Focused on brand storytelling with partners to drive regional collective brand identity focused on economic prosperity.

Strong Brain Institute: focused on producing education content and marketing activation for Trauma Informed Workplaces for the State of Tennessee.

Woods Hole Oceanographic Institution: A climate film focused on hope.

Music Communities: Community pilot for a statewide initiative.

StoryCollab: Supporting media needs for StoryCollab storytelling initiatives.

PARTNERS: create appalachia, STORYCOLLAB, TN, Tennessee Hills, SyncSpace

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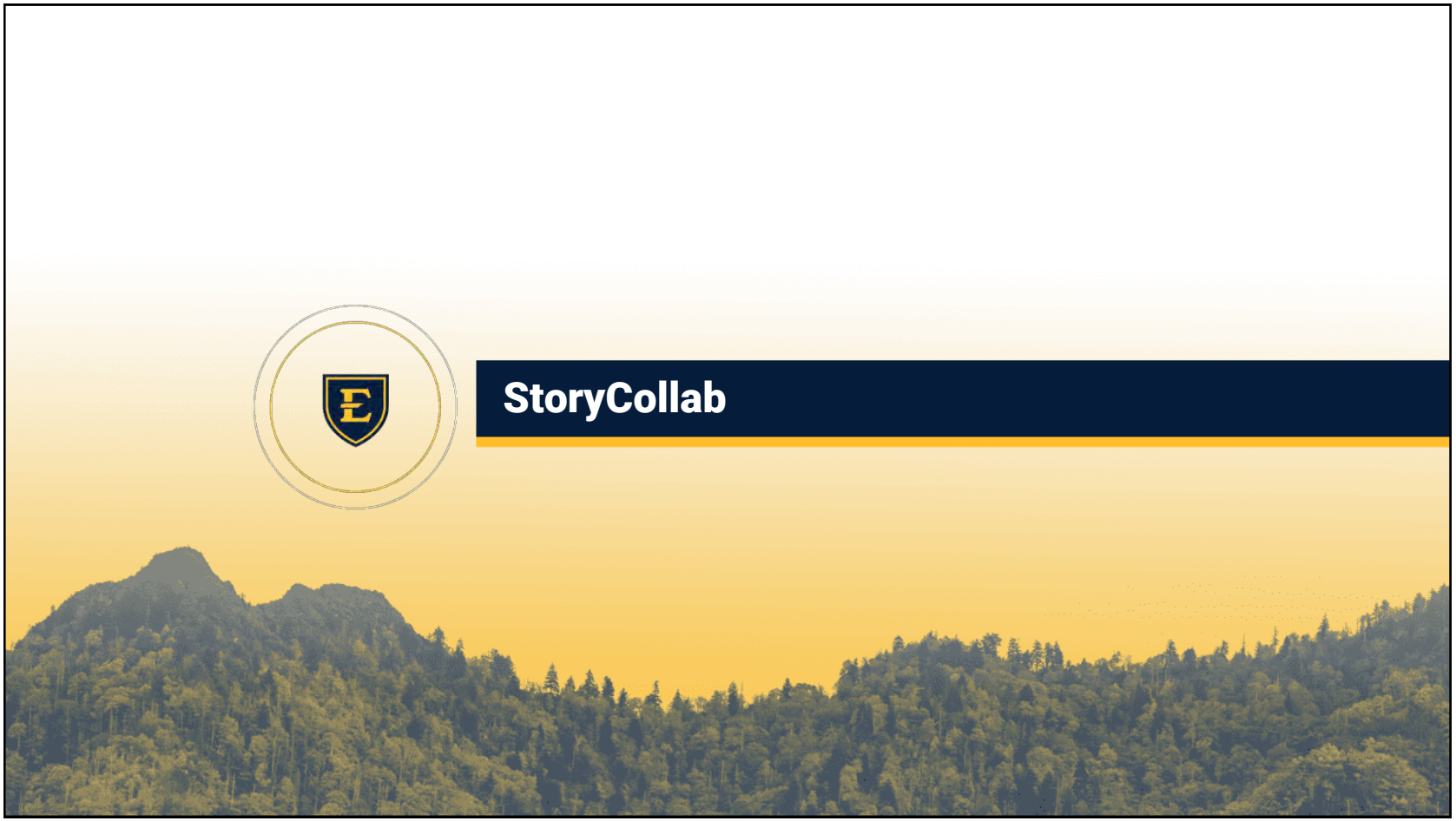
StoryCollab

IMPACT THROUGH STORY

STORYCOLLAB

OVERVIEW

StoryCollab is an RC start-up harnessing the potential of personal narratives and brand storytelling to generate meaningful impact.

Allison Myers brings a wealth of experience spanning two decades across a robust network. Her extensive body of work encompasses engagements with over 120 prominent, global entities along a spectrum of domains, including academia, governmental bodies, nonprofit organizations, social justice initiatives, publicly traded corporations, and public health agencies.

Partnership with the RC provides marketing and media support as well as enhanced student learning experiences.

A platform for public and tailored workshops providing organizations research, creative, and community-building value.

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Allison Myers

StoryCollab

ETSU Research CORPORATION

Allison Myers, former Senior Program Director and Principal Facilitator at StoryCenter since 2008, (*founders of the Digital Storytelling movement and methodology*) joined the Research Corporation on August 1st. Allison brings a wealth of experience and a passion for amplifying individual and community voices through innovative media creation. Allison's facilitation style centers around community-based, ***participatory*** methodologies, leveraging various media forms such as digital storytelling, podcasts, story mapping, and short-form documentaries.

Through her guidance, participants not only create compelling narratives but also learn to navigate the digital landscape to advocate for change and connect with diverse audiences. Her approach promotes empathy, self-reflection, collective growth and capacity-building in 21st century digital literacy skills. Her expertise has been applied across diverse sectors, including higher education, international education, leadership development, and community and public health, both within the United States and on the global stage.

A graduate of Vanderbilt University (BA) and the University of Colorado (MA), Allison's expertise has garnered recognition on a global scale. Her work has been featured on NPR and supported by partners including the U.S. Department of State, numerous leading universities, and the National Health Services of the UK. Her extensive experience working with diverse communities, including refugees, indigenous leaders, and survivors of various challenges, showcases her adaptability and commitment to inclusive storytelling.

Allison has traveled and worked in over 45 countries, and speaks Spanish and Portuguese

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Center for Bioindustrial Manufacturing

Growing The Future:

Symposium on Innovation and Education for the Bioeconomy

- **Speakers, panel, and 270+ attendees**
- **Dr. Linda Latimer**
  - Chair | ETSU Board of Trustees
- **Dr. Brian Noland**
  - President | ETSU
- **Dr. Bryan Greenhagen**
  - Program Lead | Gingko Bioworks
- **Dr. Kate Sixt**
  - Principle Director for Biotechnology | DoD
- **Scott Niswonger**
  - Founder | Niswonger Foundation

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Center for Bioindustrial Manufacturing

- Synthetic Biology is a disruptive technology
- Appalachian Highlands can be part of the global growth
  - Estimated $Trillions globally over next few decades
- Scale-up bottleneck is now a national security issue
- RC has the skillset and facility to meet the challenge
- Pursuing funding for equipment, staff, and projects

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Eric Jorgenson

VP of Biomanufacturing Development

- 14 years in Industrial Fermentation
  - Operations
  - Microbiology
  - Quality Control
  - Department-building
  - Scale-up
- Directly managed all engineering and commissioning for:
  - $8m+ capex
  - Bioindustrial manufacturing facility
  - Sensors, process control, and automation integration
  - Two fermentation science / QC labs
  - Scale-up lab, clean room, and pilot operations
- Three areas of core expertise:
  - Microbiology
  - Industrial process and engineering
  - Team leadership and department-building

ETSU Research Corporation

LESAFFRE

Envera

VICTORY

MASTER BREWERS

HIGHLAND BREWING 1994 ASHEVILLE, NC

ASBC THE SCIENCE OF BEER

STONE BREWING

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Progress Update

- EIR STEM LD – BioBuilder synbio curriculum throughout TN-01 Highschools
- BioMADE 2.0 – BioBuilder materials, peer review, publication, and effectiveness study
- Schmidt Futures – study and model unique success of BioBuilder in TN-01
- BioMADE 3.0 – Biomanufacturing Workforce Certificates
- BioMADE Letter of Interest – Network of Scale-Up Facilities
- Tennessee ECD and LaunchTN formal support for EDA grant applications
- 2x early-stage synbio commercialization projects in progress concurrently

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14


Innovation Lab

i-Lab Occupancy is at 97%

13,872 Square Feet
22 Companies
Current Verticals

- Cleantech
- Software Development
- Cyber Security
- Artificial Intelligence
- Aerospace
- Automotive
- Robotics
- Logistics
- Medical Technology/Devices
- Recreational Technology
- Farm Tech
- Streaming
- Microbiome Technology
- Synthetic Bio
- Polymer/Plastics Chemistry
- Environmental
- Metal Technology
- Entertainment

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Soft Landings Companies at the i-Lab.

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Dr. Depelteau's Recognition

JOHNSON CITY – Dr. Audrey Depelteau, director of East Tennessee State University's **Innovation Lab**, will become the first Tennessean invited to speak at the SelectUSA Investment Summit hosted by United States Secretary of Commerce Gina Raimondo.

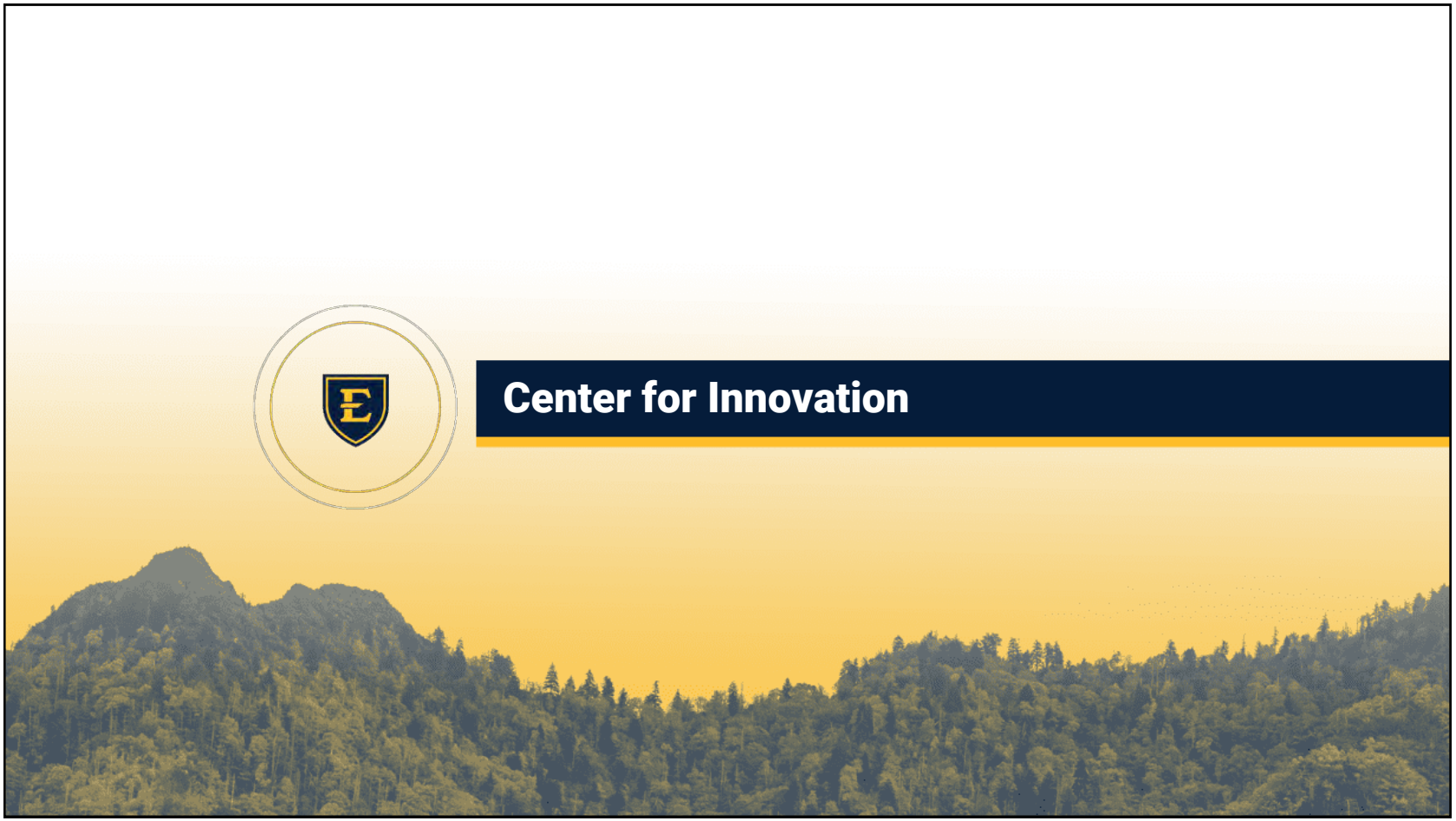
The event, May 1-4 in Washington, D.C., connects investors, companies, industry experts and various organizations with the goa of promoting investment deals in the U.S.

"The ETSU Innovation Lab is an International Soft Landings designation certified by the International Business Innovation Association. The scope of the Soft Landings program, however, extends far beyond our walls. The strength of this program is a function of the collaborations and partnerships between The Northeast Tennessee Valley Regional Industrial Association (NETVRIDA), ETSU, the ETSU Research Corporation, local and regional economic development agencies and various other stakeholders," said Depelteau. "It is an honor to represent ETSU, our region and the State of Tennessee, and I'm happy to say that my calendar is already filling up with invitations from individuals/companies wanting private consultations with me."

"It is an honor to represent ETSU, our region and the State of Tennessee" – Dr. Audrey Depelteau

The U.S. Department of Commerce has honored Depelteau in other critical ways, too. She is certified to mentor international women in tech, and she will attend two invitation-only receptions with the Secretary of Commerce. As part of the Select Global Women in Tech Program (SGWIT), she works with international female founders, entrepreneurs and executives in the tech sector.

"The SGWIT Mentorship Network introduces international female tech entrepreneurs to the U.S. market with the support of SelectUSA's traditional data and counseling services, as well as community, learning and networking opportunities," she said. "I am honored to be mentoring international women in tech with pitch training, strategic planning, funding, investment basics, leadership training, time management, problem solving, negotiating, goal setting, becoming a high performer and more. I look forward to using these skills in assisting woman-owned businesses locally as well."


Center for Innovation

“Center for Innovation” Organization

Background:

- The ETSU Research Corporation established program to build the Entrepreneurial Ecosystem and Mentorship Network within the University and the Appalachian Highlands Region
- Ballad Health committed $1 million to the Research Corporation to promote Innovation—including operational support.

Operations:

- Fulfill identified Mission, Vision and Strategy
- Support Regional and Research Corporation Innovation, Workforce Development and Economic Development initiatives
- Create vehicles to Recruit external early-stage companies

Status:

- Center has established its administrative, financial and working organization (dba of the Research Corporation)
- Programs have been planned and in process of being established

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Center for Innovation

VISION

Appalachian Highlands Region is a Recognized Leader of World Class Innovation and Entrepreneurship in a Rural Setting.

MISSION STATEMENT

Create a Recognized Center for Innovation in the Appalachian Highlands that integrates Research, Business Development, and Investment in Early-stage and Small Scalable Companies. Create a Robust Sustainable Environment able to Seed, Nurture, Fund and Grow Entrepreneurial Activity in a Rural Setting.

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Strategy

DESIRED ENDSTATE (What does "success" look like?)

Appalachian Highlands is a Prosperous Region with a robust sustainable environment that seeds, cultivates and grows Research, Business Development, and Investment and a Recognized Leader in Rural Innovation. Within this Ecosystem, the "Center" is the Catalyst for Innovation and Entrepreneurship by promoting, coordinating, and supporting existing organizations/operations and building new programs in the Appalachian Highlands Region.

STRATEGIC OBJECTIVES *(Conditions that define the "Desired Endstate")*

- Access to Capital for early-stage startup (including substantive regional capability)
- Presence of a robust and integrated Research capability across academic, private sector and public sector.
- Access to World Class regional tech-based research and manufacturing Facilities (real assets)
- Presence of an active IP/Tech Transfer capabilities based on regional expertise
- Create Robust Entrepreneurial Ecosystem and Mentorship network
- Create strong and sustainable Public and Private Partnerships that actively support change and innovation

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Current Programs

“CENTER FOR INNOVATION” ORGANIZATION

Create the MVP for the “Center.” Formulate and Create the Organizational, Administrative, and Operational capabilities .

VALLEYBROOK SYNBIO INDUSTRIAL MANUFACTURING FACILITY AND PROGRAMS

Provide support to renovate facility and assist in development of research/manufacturing programs.

ß-TECH ACCELERATOR

Identify, Recruit, Nurture and Promote promising Early-stage and Small Scalable Companies to support Regional Economic Development and Academic Programs. Organize accelerator cohorts around sponsored programs and capabilities.

ENTREPRENEURIAL/ACADEMIC SOFTWARE (startupetsu.com)

Develop StartupETSU software to support Academic Programs and help grow companies enrolled in ß-Tech Accelerator.

MICRO VENTURE FUND

Provide early-stage access to capital

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Valleybrook Synbio Manufacturing

Background:

- Eastman donated the Valleybrook Research Facility to ETSU in 2010.
- Over 100,000 sf with 32 wet labs numerous offices and convening spaces and warehousing.
- Has been used for several academic programs and classes, but fundamentally remained under utilized for its intended purpose
- The Research Corporation is leasing the space from the university (pending) and is in the process of renovating the facility (in phases).
- Eric Jorgenson has joined the Research Corporation--strong background in fermentation and setup and operation of SynBio Scaling Operations

Potential Applications:

- Synbio Research Facility
- Synbio Industrial Manufacturing and Scaling Facility (pilot to small-scale production)
- Incubator Space for startup companies (particularly Center Accelerator Cohorts)

Status:

- Lease with ETSU pending
- Estimates and planning for physical renovations underway
- Scope of work for the Manufacturing/Scaling Operations being developed
- Numerous grant applications underway
- Ongoing Projects under NDAs

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ß-TECH ACCELERATOR

Background:

- Recognized need to create a "higher-level" accelerator program to Identify, Recruit, Nurture and Promote promising Early-stage and Small Scalable Companies to support Regional Economic Development and Academic Programs
- Ballad Health committed $1mil to Research Corporation to promote Innovation, some of which will be utilized in operation of the accelerator program

Potential Application:

- Provide avenue for early-stage Companies to move beyond currently available regional capabilities
- Create structured Accelerator Cohorts to support other programs (e.g., utilized the SynBio program as "hook" to attract companies to the region)
- Support ETSU and Ballad Health IP/Tech Transfer and company development

Status:

- Accelerator process and programs have been created
- Currently have one company in the accelerator
- Working with SyncSpace to incorporate LaunchTN programs and gain additional funding

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“StartupETSU” Software Package

Background:

- This is a web application that was designed to be a fee for service (SaaS) platform that helped potential startups get funding.
- It is being donated to the Research Corp
- There are two components to the package:
  - LaunchopediaXL (now StartupETSU.com)) This is a resource/informational site/blog
  - TurboFunder(now Funding.StartupETSU.com) This is a program that structures resources to assist companies build comprehensive Due Diligence package

Potential Application:

- *ß-Tech Accelerator*
  - Provide structured program to guide start-up companies grow companies
  - Provide structure for Accelerator Programs/Curriculum
- *Academic Platform*
  - Experiential Learning as a resource/knowledge-base for economic - entrepreneurial class with opportunity for students to add blogs and other useful resources
  - Curriculum Assistance - Web Application can be utilized to assist students in projects (e.g. setting up a company) and can be helpful to Instructors to evaluate student-created projects

Status:

- Donation recently finalized.
- Through the Research Corp we are rebranding the platform as **“startupETSU.com”**

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Micro-Venture Fund (very preliminary)

Background:

- Recognized need to provide limited venture investment to promising Regional Early-stage and Small Scalable Companies
- Ballad Health committed $1mil to Research Corporation to promote Innovation, some of which will be utilized as initial seed funding to the program

Operational Focus

- Investment Thesis (preliminary): To promote regional prosperity, job creation, and economic development, we focus on investments that leverage the unique capabilities and comparative advantages of the region. Our investment criteria:
  - Innovation
  - Scalability
  - Return on Investment
  - Sustainable Economic Impact
- Target Fund Size: $500,000 fund supported by multiple network investors. Anticipated investment is in the range of $15,000 to $100,000. Focus on Pre-seed and Angel Investment stage companies

Core Areas of Interest:

- SynBio Research and Manufacturing
- Rural Health Care
- Targets of Opportunity within the Region

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Partnership Development

Background:

- Recognized need for strong and sustainable Public and Private Partnerships that actively support Change and Innovation
- Recognized need to develop directed Academic, Business, and Governmental Partnerships including support for building a “Consortium” of partners required in Grant applications

Potential Application:

- Southwest VA Engagement Program
- Broaden scope to include other areas based on regional “Comparative Advantages”

Status:

- We have created de facto partnership relationships with numerous regional players
- We have solicited support in building the regional “Consortium” of partnership support
- We are directly working with some partners in on-going projects

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Other Supported Programs

PROJECT GEMINI

Assist in the development of a regional digital twin for Population Health and Prosperity collaborative research.

IP/TECH DEVELOPMENT

Develop process to inventory and catalogue current IP. Support ETSU and Ballad Health IP/Tech Transfer and company development.

WORKFORCE DEVELOPMENT

Develop World Class Workforce with the ability to attract and retain talent in the Region. Assist in developing process to inventory and catalogue current workforce training programs. Create mechanism to develop future collaborative workforce training programs focused on Research Corporation initiatives.

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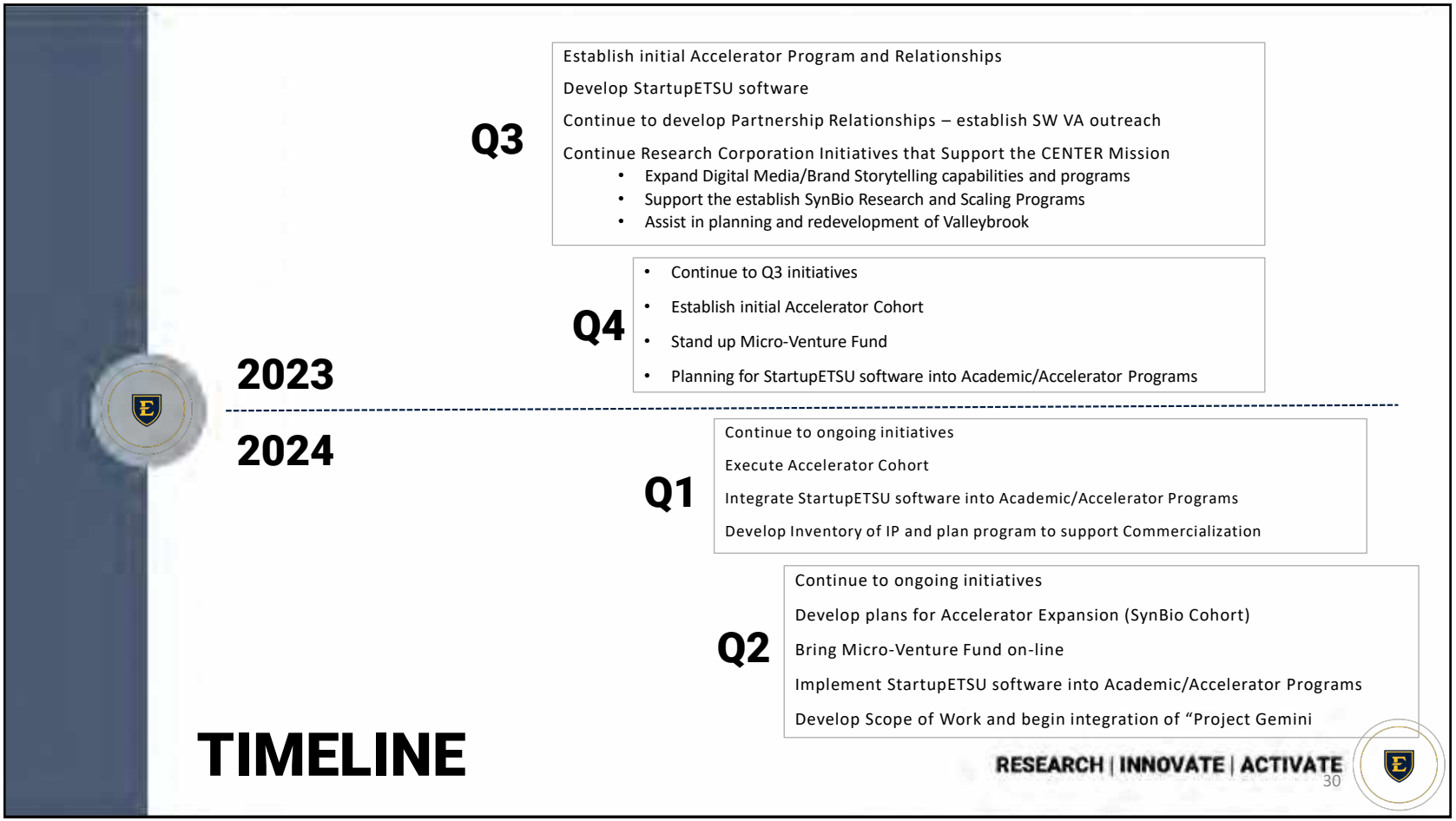
2023
2024
Q3
Establish initial Accelerator Program and Relationships
Develop StartupETSU software
Continue to develop Partnership Relationships – establish SW VA outreach
Continue Research Corporation Initiatives that Support the CENTER Mission
• Expand Digital Media/Brand Storytelling capabilities and programs
• Support the establish SynBio Research and Scaling Programs
• Assist in planning and redevelopment of Valleybrook
Q4
• Continue to Q3 initiatives
• Establish initial Accelerator Cohort
• Stand up Micro-Venture Fund
• Planning for StartupETSU software into Academic/Accelerator Programs
Q1
Continue to ongoing initiatives
Execute Accelerator Cohort
Integrate StartupETSU software into Academic/Accelerator Programs
Develop Inventory of IP and plan program to support Commercialization
Q2
Continue to ongoing initiatives
Develop plans for Accelerator Expansion (SynBio Cohort)
Bring Micro-Venture Fund on-line
Implement StartupETSU software into Academic/Accelerator Programs
Develop Scope of Work and begin integration of "Project Gemini
TIMELINE
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30


K-12 Initiatives

RC Supports and Drives K-12 Education Initiatives in the Appalachian Highlands.

- STREAMWORKS
  - Robot Drone League (RDL)
  - Regional MATE Underwater Robotics Development
  - MATE Super Regional
  - Summer Camps
  - Student Experiential Learning
- BioBuilder
- ETSU Buccaneers Underwater ROV Team (13th place finish in World Championship)
- 2024 World Championship MATE ROV Competition Will be Held in our Region
- Music for All Regional Championship on the ETSU Campus
  - 4,300+ students
  - 8 states (including Missouri and Arkansas)
- Feeder Program for the University
- Working with Dr. Lang and the ETSU Center of Excellence in STEM Education

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Regional Higher ED² Council Initiative

Regional Higher ED^2 Council Initiative

Higher Ed + Economic Development (ED)--Convened by the ETSU Research Corporation.

Connecting Regional Economic Development Officers ("EDO") and the Innovation/Economic Development Offices of ETSU and other Regional Higher Education Entities.

Serve as an Innovation Partner in helping EDOs Recruit and Retain Industry.

Serve as a forum for EDOs to share strategies and "pain points" and convene/drive education/innovation-related ideation.

Provide EDOs line-of-sight into the Higher Education-related innovation pipeline.

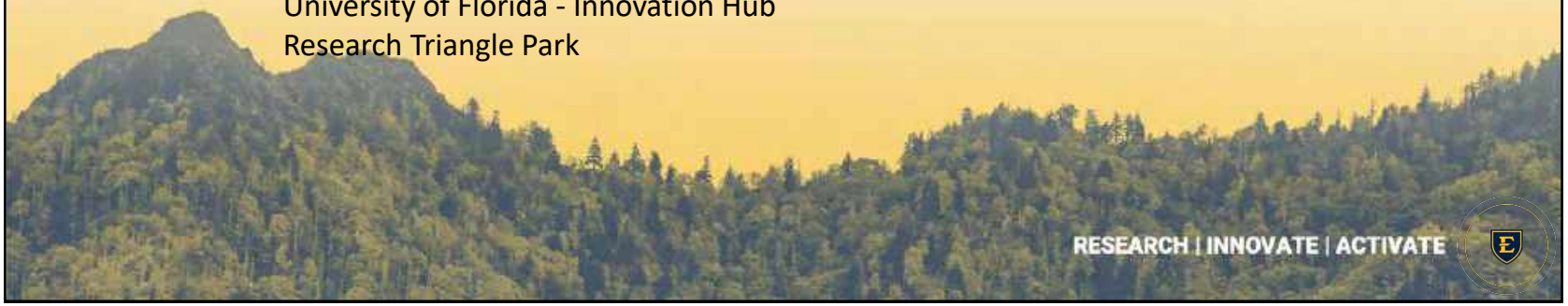
Generate Media and Marketing Content for EDOs to use in Industrial Recruitment (e.g., "Who Knew?" series).

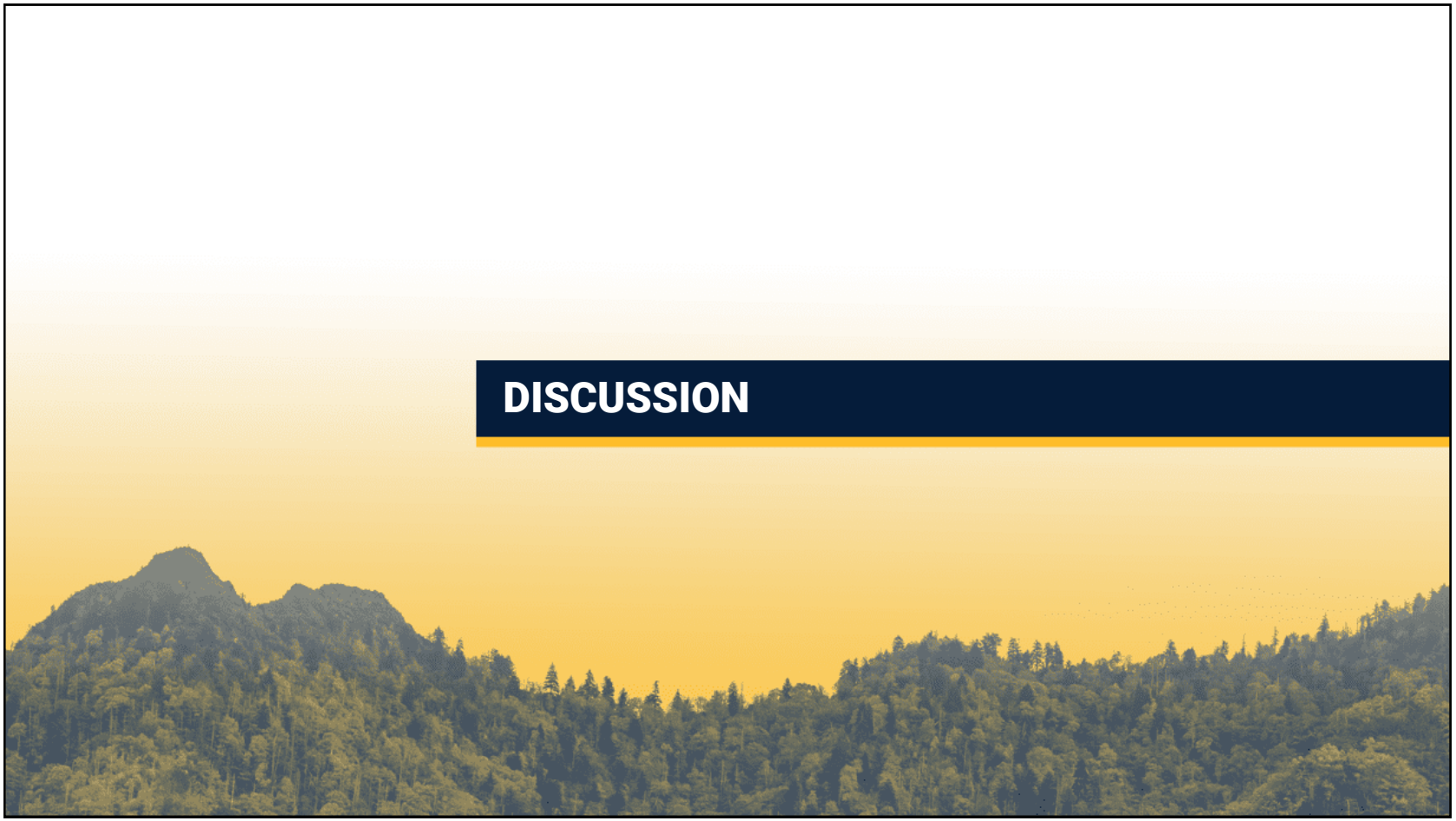
Serve as "Single Source" resource for EDOs of region-wide data relevant to economic development.

Regional Higher ED^2 Council

Other Examples where Higher Ed accelerates Economic Development

University of California, San Diego (UCSD) - UCSD Innovation Hub
Georgia Tech - Atlanta Regional Collaborative for Health Improvement
University of Michigan - Michigan Economic Development Corporation (MEDC)
Stanford University - Stanford Research Park
MIT - MIT Industrial Liaison Program (ILP)
Carnegie Mellon University - Metro21: Smart Cities Institute
University of Colorado Boulder - Boulder Innovation Center
Harvard University - Harvard Innovation Labs
Purdue University - Foundry
University of Florida - Innovation Hub
Research Triangle Park




DISCUSSION


ETSU
Research
CORPORATION
Enriching the Region,
Impacting the World.
www.etsurc.org