

# **Periodic Review Report**

### Submitted to the Middle States Commission on Higher Education

### State University of New York College of Environmental Science and Forestry

### June 1, 2017 Dr. Quentin D. Wheeler, President

Accredited Since: 1952 Reaffirmation of Accreditation: March 1, 2012 Evaluation Site Visit: November 6-9, 2011

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### **Section 1: Executive Summary**

### **Institutional Context**

The State University of New York College of Environmental Science and Forestry (ESF or the College) is one of the 64 institutions in the State University of New York (SUNY) system. It was created by an act of the New York State legislature in 1911 as the New York State College of Forestry at Syracuse University. With the formation of the State University of New York in 1948, the College became recognized as a specialized college within the state university system, having been state-supported from the very beginning. The name was changed to the State University College of Forestry at Syracuse University. In 1972, the College's name and focus were changed yet again, to better reflect the tradition and grounding of forestry in the environment, and the capabilities of our academic programs. By special act of the New York State Legislature, the College became the State University of New York College of Environmental Science and Forestry. The mission of the College includes research and education dedicated to solving a wide range of environmental and related problems, while taking into consideration human and economic implications as well as scientific understanding. Sustainable practices have been embedded within the College from the beginning.

Today, the College is at the forefront of developing the technologies to create a sustainable future. Under the direction of President Quentin Wheeler ESF has taken a leadership role in species preservation, raising public awareness of biodiversity and sustainability. The campus continues to grow and change. The Gateway Center, the LEED Platinum building that has become the hub of campus life. Opened in 2013, the building displays specimens from the College's Roosevelt Wild Life Collection, the Trailhead Café, the offices of Admissions and Outreach and conference space. ESF opened its first residence hall, Centennial Hall, in 2011. ESF is classified as a Carnegie R3 campus: Doctoral Universities – Moderate Research Activity. Other Carnegie descriptors include STEM dominant, high undergraduate, primarily residential, and higher transfer-in.

### Major Developments since the Decennial Self-Study:

- Inaugural Chief Diversity Officer in Summer 2017
- New Provost and Executive Vice President in May 2017
- New York State's Excelsior Scholarship Program beginning in 2017
- Hired Assistant Director for Assessment & Institutional Research in February 2016
- New Vice President for Research, Fall 2016
- Updated organizational structure, Summer 2016
- Updated Strategic Plan, Spring 2016
- New President, 2012
- Government Relations recently secured the following funding:
  - o NYS Legislative Funding 2016-17: \$100,000 for College Projects
  - o NYS Legislative Funding 2015-16: \$600,000 for College projects

- o NYSUNY 2020 Grant Round IV: \$3.5M Labs to Jobs, 2015
- NYS Legislative Funding 2014-15: \$2M Roosevelt Education Center at Onondaga Lake, 2014
- NYSUNY2020 Grant Round III: \$20M Research Education Center at Onondaga Lake, 2014
- NYS Legislative Funding 2013-14: \$200,000 CNY Biotech Accelerator NYS Environmental Facilities Corporation 2013; \$413,000 ESF Gateway Green Roof
- NY SUNY 2020 Grant Round II: \$4.3M Institute of Environmental Health and Environmental Medicine, 2013

### **Report Overview:**

Section 2 covers the five years since the last self-study for reaccreditation at ESF. Since the 2012 decennial review, ESF has made progress in terms of institutionalizing unit level assessment and the assessment of student learning outcomes. ESF has made a commitment to further development and implementation of an organized and sustained process for the assessment of student learning, including the hiring of an Assistant Director for Assessment and Institutional Research. This doctoral level professional staff member is responsible for supporting all assessment efforts at ESF, including faculty assessment efforts, coordinating assessment of student learning at an institutional level, and assisting academic departments with the ongoing improvement of their assessment processes as requested. As an administrative team member, this individual serves as a point of contact within the institution to ensure that the data available for review of academic assessment at the institutional level is accurate, organized, and robust.

In Section 3, we describe the actions we have taken to address the institutional challenges we identified as part of our decennial self-study in 2012. ESF has engaged in continuous improvement activities including the development of *Vision 2020 Update: Bridging from 2016 to 2020 and Beyond*, which highlights accomplishments since the 2003 *Vision 2020* strategic planning document. *Vision 2020 Update: Bridging from 2016 to 2020 and Beyond* maps well to the challenges ESF identified in the 2011-12 self-study document, and illuminates the important progress the College has made toward addressing significant institutional challenges. Central to these challenges we identified in our decennial self-study are revenue generation and enrollment management, which are explored in detail as part of the enrollment and Finance Trends and Projections section of this report.

A description of our enrollment and financial trends and projections appears in Section 4. As part of the State University of New York System, ESF is fully engaged with enrollment and finance trending and projections to fulfill System expectations, and to ensure campus financial health and viability. As a member of SUNY, there are centralized reserves to provide to any institution should serious financial circumstances arise, but ESF has been successful in stabilizing the campus financial condition while providing a platform from which to make necessary investments to grow and thrive. Because of these campus-level investments and planning, the College has the fiscal stability necessary to safeguard against unexpected changes in the economic landscape. Our enrollment planning and projections align with both institutional and system-wide objectives, and are realistic for the campus as we pursue new revenue streams from the ESF Open Academy initiative. Benefits of engaging in enrollment planning and projections through these system-wide activities include discussion about the assessment of current enrollment trends, aspirational planning on a routine and periodic basis at the campus-level, and linking enrollment projections to competitive funding available at the system level for continuous improvement.

Over the past five years, ESF has invested a great deal of effort into improving our assessment of institutional effectiveness and student learning, the results of these efforts are summarized in Section 5. The College has invested in the use of TracDat software to document assessment efforts of all administrative units and academic programs, the hire of an Assistant Director for Assessment and Institutional Research to guide assessment efforts and manage assessment information at the College, and campus-wide attention to the value of institutional assessment to support student success have emerged as distinctive elements of a continuously maturing assessment culture at ESF. The Assistant Director works with faculty to shape and organize assessment processes with both departmental needs and institutional needs in mind. Faculty at ESF continue to make sustained improvements to both their assessment methods as well as "closing the loop" by making changes to courses for the improvement of teaching and learning based on feedback gleaned from assessments at the course and department levels.

Section 6 covers the campus-wide engagement in institutional improvement initiatives. We have formalized a campus-wide culture of assessment and participate in system-wide institutional enrollment planning and budgeting activities to clarify linkages between those essential functions. Due to the 2008 economic downturn and reduction in state funding, ESF faced a structural budget deficit. In order to overcome these financial constraints and ensure long-term financial stability for the College, the Interim Provost and Executive Vice President and the newly appointed Assistant Provost for Academic Finance developed and implemented a visible, enterprise-wide financial planning effort that has been incorporated into institutional financial planning and management activities.

The institutional strategic plan, *Vision 2020 Update: Bridging from 2016 to 2020 and Beyond* (Appendix A), details the results of College strategic initiatives in support of each goal ESF has set for the future, and a brief discussion of our progress toward the targets identified by the Strategic Planning Steering Committee as supportive of each goal. This document also provides further information about the alignment between our institutional goals and SUNY System priorities. To offer more depth to the discussion of institution-wide support for inclusion, diversity, and equity at ESF, the campus Diversity Strategic Plan is included (Appendix B). This document is part of a System-wide initiative to support diversity and inclusion on all sixty-four campuses of the State University of New York system, and ESF has embraced this systematic

and institutionalized method of responding to the increasing need for greater cultural competency on campus. The October 2016 Progress Report (Appendix C) that was submitted to the Commission in response to concerns about our assessment of program learning outcomes in all programs including general education provides more detail about how our institution has engaged with assessment of student learning in a cohesive, organized, and sustained manner.



#### **Certification Statement: Compliance with MSCHE Requirements of Affiliation and Related Entities Policy** (For use by SUNY State-Operated Institutions) Reviewed and Affirmed July 16, 2015

An institution seeking initial accreditation or reaffirmation of accreditation must affirm that it meets or continues to meet established MSCHE Requirements of Affiliation and the "Related Entities" policy.

This signed statement should be attached to the executive summary of the institution's self-study report.

SUNY College of Environmental Science and Forestry

(Name of Institution)

The State University of New York represents that this institution operates within the program of the SUNY System. The undersigned hereby certify that SUNY recognizes the Commission's compliance requirements for this institution and will uphold State University's policies pertaining to MSCHE Standards and Requirements of Affiliation.

(Campus President)

(Chair, SUNY Board of Trustees)

5/22/17 (Date)

(Date

### Section 2: Summary of Institutional Response to Recommendations From Previous Evaluation and to Commission Actions

Since our decennial reaccreditation visit in November 2012, ESF has acknowledged and responded to a series of recommendations regarding Standards 7, 12, and 14. These recommendations as well as recent Commission actions are summarized in Table 1.

Table 1. Summary of MSCHE Recommendations & Institutional Response/Action	Table 1	: Summarv	of MSCHE	Recommendations	&	Institutional	Res	oonse/Action
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•		•								
MSCHE Recommendations		2012 ESF Institutional Response								
		2017 ESF Actions/Evidence								
Commission Actions										
November 2016: To	accept the progress report									
November 2015: To	November 2015: To accept the monitoring report and note the visit. To request a progress report									
due 10/1/16 documenting further development and implementation of assessment process.										
May 2015 Follow U	p Team Visit									
<b>Recommendation:</b>	Concern exists that programs have	CwSLO Committee developed an								
Standard 12	only reviewed the general education	annual timeline for assessment data								
	outcomes one time (and one has yet	collection as well as a three-year								
	to be assessed). The Team	assessment cycle where we evaluate								
	recommends the further	three of the six CwSLOs each								
	implementation of a cycle of	academic year, while assessing the								
	assessment. The Team	data collected during the prior year.								
	recommends, that for the College to	Specifically regarding the outcome								
	maintain compliance with this	that had not been assessed prior to								
	standard, that the College revise its	the May 2015 Team Evaluation, two								
	assessment process of student	years of data were assessed in								
	learning so that evidence is	preparation for the October 2016								
	reviewed annually for some of the	follow up report.								
	outcomes.									
Recommendation:	The Team recommends continued	Since the 2015 Evaluation Team								
Standard 14	efforts to ensure that all programs	visit, most programs have shifted								
	use direct assessments of student	their assessments of student learning								
	learning in their assessment errorts.	to incorporate direct assessment in the form of capstones and targeted								
		aven questions in order to ansure								
		students are achieving learning								
		outcomes to a satisfactory degree								
Recommendation:	The Team recommends that the	Course program and College								
Standard 14.	institution better articulate student	learning outcomes have been								
Standard 14.	learning expectations within the	incorporated into the institutional								
	program review process.	syllabus template as required items.								
	r0	which is an indication that								
		departmental faculty, as well as the								
		institution collectively, have								
		committed to improved articulation								
		of student learning expectations								

		through the program review process.		
November 2012 Dec	ennial Evaluation Team Visit			
<b>Recommendation:</b>	The campus could benefit from	2012 ESF Response: President		
Standard 7	focused leadership that is given	provides IE leadership with support		
	both the responsibility and the	from Cabinet. Assistant Provost		
	resources necessary to carry out a	supports unit-level assessment data.		
	robust assessment program that	Unit-level data used to monitor		
	informs decision-making, including	strategic plan progress relative to		
	decisions regarding budget	goals.		
	allocations.	The newly created Administrative		
		team includes Assistant Provost for		
		Academic Finance, newly hired		
		Assistant Director for Assessment &		
		Institutional Research, Financial		
		Aid, Vice Provost for Student		
		Affairs, and others who come		
		together to inform campus wide		
		decision making, including		
		decisions regarding budget		
		allocations. These individuals also		
		inform the President's Cabinet.		
<b>Recommendation:</b>	The team recommends that	2012 ESF Response: Assessment of		
Standard 14	assessment activities should address	student learning outcomes		
	measureable outcomes and lead to	accomplished as outlined in 2009		
	meaningful curricular change.	Monitoring report. Each program		
	Assessment results should inform	has an assessment plan that includes		
	proposals for curricular additions	explicit SLOs, a schedule for data		
	and modifications and should, at	collection, and a process for data		
	times, guide plans for retiring	analysis.		
	courses or majors. The Office of	The Provost's Office has hired a		
	Academic Affairs should ensure	professional staff member		
	that this happens.	responsible for coordinating and		
		leading assessment activities,		
		including the individual's role as a		
		resource for incorporating		
		assessment results into plans for		
		curricular changes.		
Recommendation:	The institution must continue to	2012 ESF Response: Full cycles of		
Standard 14	dedicate faculty effort to learning	departmental assessment plans had		
	outcomes assessment. Continued	not yet been completed as of 2012.		
	leadership is necessary for sustained	Departments/faculty produce self-		
	assessment activity and may require	study reports detailing curricular		
	additional resources. The institution	changes made based on assessment		
	snould consider how best to ensure	results.		
	raculty participation in outcomes	Assistant Director for Assessment &		
	assessment. An appropriate	Institutional Research hired, and		

College-wide curriculum committee might be a logical starting point	meets with faculty through committees and department meetings to provide leadership and consultation regarding SLO
	assessment.

### November 2012 Decennial Visit and Campus Response

The recommendations the Team offered for ESF at the decennial reaccreditation visit included comments on Standard 7 and Standard 14. Concerning Standard 7, "The campus could benefit from focused leadership that is given both the responsibility and the resources necessary to carry out a robust assessment program that informs decision-making, including decisions regarding budget allocations." In 2012, the response from ESF was that the President provides Institutional Effectiveness leadership with support from the Cabinet, and the Assistant Provost for Assessment supports unit-level assessment data, which are used to monitor strategic plan progress relative to goals. Since that initial response, the Provost's title has changed to Provost and Executive Vice President, to more accurately reflect the scope of duties and responsibilities of the office at ESF, and instead of an Assistant Provost for Assessment the College hired an Assistant Director for Assessment and Institutional Research. Additionally, the Provost's Administrative Team meets bi-weekly and includes the Assistant Provost for Academic Finance, a newly created position for the institution, the newly hired Assistant Director for Assessment and Institutional Research, Director of Financial Aid, Vice Provost for Student Affairs, Associate Provost for Instruction and Dean of the Graduate School, and the Dean of ESF Open Academy. These individuals come together to inform campus-wide decision-making, including decisions regarding budget allocations as well as providing information to the President's Cabinet regarding assessment-informed decision-making and budgeting. The membership of this team has adapted as necessary to include campus representatives necessary to ensure the Provost has robust information to guide resource allocation.

The reaccreditation team offered the following Recommendations regarding Standard 14:

- 1. The team recommends that assessment activities should address measurable outcomes and lead to meaningful curricular change. Assessment results should inform proposals for curricular additions and modifications and, at times, guide plans for retiring courses or majors. The Office of Academic Affairs should ensure that this happens.
- 2. The institution must continue to dedicate faculty effort to learning outcomes assessment. Continued leadership is necessary for sustained assessment activity and may require additional resources. The institution should consider how best to ensure faculty participation in outcomes assessment. An appropriate College-wide curriculum committee might be a logical starting point.

In 2012, the institutional response to the first recommendation was to explain that the assessment of student learning outcomes had been accomplished as outlined in the 2009 Monitoring Report. Each program has an assessment plan that includes explicit Student Learning Outcomes, a schedule for data collection, and a process for data analysis. With further refinement of our

assessment activities, the Provost's Office has added a professional staff member responsible for coordinating and leading assessment activities, including the role as a resource for incorporating assessment results into plans for curricular changes. The Assistant Director of Assessment and Institutional Research is in a unique position to juxtapose institutional data with the nuanced assessment activities and results of academic departments to assist in data-informed decision-making about curricular changes. Related to the addition of an Assistant Director of Assessment and Institutional research as part of the Provost's Administrative Team, the person in this role is also responsible for leading faculty effort in student outcomes assessment and ensuring that assessment activities are sustained and effective.

#### **October 2015 Monitoring Team Visit**

The most recent monitoring team visit occurred in October 2015 and resulted in Commission recommendations regarding Standard 12 and Standard 14. The first recommendation was related to Standard 12. It reads, "Concern exists that programs have only reviewed the general education outcomes one time (and one has yet to be assessed). The Team recommends the further implementation of a cycle of assessment. The Team recommends, that for the College to maintain compliance with this standard, that the College revise its assessment process of student learning so that evidence is reviewed annually for some of the outcomes." Using this feedback to guide our continuing implementation of a culture of assessment at ESF, the College-wide Student Learning Outcomes (CwSLO) Committee developed an annual timeline to guide assessment data collection as well as a three year assessment cycle where we evaluate three of the six College-wide Student Learning Outcomes each academic year, while assessing the data collected during the prior year. This assures that each outcome will be assessed in alternating years. Specifically regarding the Outcome that had not been assessed prior to the 2015 Monitoring Visit, two years of data were assessed in preparation for the October 2016 Progress Report.

The next two recommendations are with regard to Standard 14. First "the team recommends continued efforts to ensure that all programs use direct assessment of student learning in their assessment efforts." Since the 2015 Monitoring Visit, most programs have shifted their assessment of student learning to incorporate direct assessment in the form of capstone experiences and targeted exam questions in order to ensure students are achieving learning outcomes to a satisfactory degree. The final recommendation from the Team was "that the institution better articulate student learning expectations within the program review process." Course, Program, and College learning outcomes have been incorporated into the institutional syllabus template as required items, which is an indication that departmental faculty, as well as the institution collectively, have committed to improved articulation of student learning expectations through the program review process.

#### **Summary of Commission Actions**

This series of recommendations from the 2011 decennial visit were included in the Team's Summary Recommendations Requiring Follow-Up Action and Requirements. While ESF was not charged with any requirements by the Team, the recommendations regarding Standard 7 and Standard 14 did generate requests for additional reports until the Commission reviewers were satisfied with the institutional progress on assessment. This included a request for a Progress Report due April 1, 2013 documenting progress on the recommendations offered for Standard 7 and Standard 14, followed by a Progress Report due March 1, 2014 documenting further implementation of an organized and sustained assessment process (Standards 7 & 14). The Commission requested a monitoring report due March 1, 2015 evaluating overall assessment effectiveness at the institution, including progress on Standards 7, 12, and 14 as well as a small team visit following the submission of the Monitoring Report. The most recent Commission request was for a Progress Report due October 1, 2016 documenting further development and implementation of a comprehensive, organized, and sustained assessment process that provides sufficient and convincing evidence that students are achieving key institutional and program learning outcomes (Standards 12 and 14). The most recent action by the Commission was "To accept the progress report." This summary of Commission actions indicates that Commission representatives are satisfied with the progress ESF has made in terms of institutional and student learning outcomes assessment, and through this Periodic Review Report, ESF will demonstrate that the process continues to be comprehensive, organized, and sustained.

### Section 3: Institutional Challenges and Opportunities

### Overview

In the 2011-2012 reaccreditation self-study, ESF identified challenges the institution would face – and overcome – over the next five to ten years. Furthermore, in May 2016 we completed a campus-wide strategic planning process that bridged the 2003 *Vision 2020* document with the current institutional circumstances, position, challenges, and opportunities. The intersection of these documents frames the current institutional challenges and opportunities, and Executive Cabinet establishes and updates a written tactical plan to guide ESF leadership through the development of a new strategic plan for the College beyond 2020. Facing myriad challenges and opportunities, this living document helps institutional leadership identify allocation of resources, investments in human resources, College advancement priorities, and legislative and other government relations activities in order to better support faculty and students. This tactical Institutional Priorities document aids in operationalizing elements of the *Vision 2020 Update: Bridging from 2016 to 2020 and Beyond* (Appendix A) and identifying the most pressing challenges in need of attention to support institutional improvement and sustainability.

ESF identified several challenges that would be imperative to address in the coming five to ten years as part of the institutional self-study for reaccreditation process in 2011-2012. These challenges are summarized below and the institutional actions and notable results related to these challenges and institutional responses are included. Overall, we have made progress on each identified challenge and realized significant results.

#### 1. Obtaining adequate operational resources within a constrained environment

ESF has embraced the concept of sustainability as a core strategy to address this challenge. Additionally, as part of the "Close the Gap" plan, the institutional strategy for addressing the structural budget deficit, we have made concerted efforts to develop new and enduring sources of revenue for the campus. The focus is on increasing out-of-state and international student recruitment as well as engaging in online programming opportunities to transcend the physical limitations of the campus. ESF is increasing staffing for the Development Office to increase donor support to the College. Through an intentional focus on sustainability, campus-wide strategic planning, and leveraging of resources, ESF has had success in reducing the structural budget deficit through a variety of means. We have improved energy efficiency on campus, and successfully implemented the combined heat and power operation to greatly reduce expenses. Through a strategic international partnership, in Fall 2018 the College will welcome fifty students from Beijing University of Chemical Technology to complete their final year of study at ESF in Bioprocess Engineering based on a 3+1 international articulation agreement between the institutions.

ESF faculty also has extramurally funded research programs, consistently appearing at the top of research expenditures per capita in the SUNY System. In response to the strength of research

activity at ESF, the Vice Provost of Research position has been elevated to a Vice President of Research title. From the 2010-2011 academic year; research expenditures have increased from \$13.4 million to \$16.1 million in 2014-2015, with an average grant "book value" of \$60-\$70 million annually over the past five years. Many of these research endeavors include partnerships with other institutions and organizations to contribute to the institutional and system-wide goal of cultivating and maintaining strong partnerships with higher education institutions within and outside SUNY, public and private organizations, and federal entities. Examples of these partnerships and achievements include partnership with the Syracuse Center for Excellence to establish the ESF Biofuels Facility to attract both researchers and start-up companies; new graduate certificate programs developed in partnership with industrial partners; ESF's Analytical and Technical Services Office has created a partnership with Upstate Medical University, Syracuse University, Cornell University, and University of Rochester to purchase and install an 800MHz Nuclear Magnetic Resonance Spectrometer at ESF through a \$2.3 million NIH grant; as well as a \$1.6 million grant from NSF to purchase a new Transmission Electron Microscope in collaboration with Upstate Medical University and Syracuse University. The combination of fundraising and successful grant writing has positioned ESF to leverage these funding types in a way that will develop long-term revenue opportunities for the institution.

### 2. Attracting and retaining quality, diverse faculty and staff within a constrained environment

Faculty and staff diversity is a high priority initiative throughout United States higher education. At ESF, we are committed to creating and sustaining a diverse community that promotes equity and inclusion for all members. Table 2 represents demographic changes to our faculty and staff population over the past five years. ESF has capitalized on the SUNY System call for institutions to prioritize this item by taking action to appoint an interim Chief Diversity Officer (CDO), who will now be replaced by a permanent CDO, and convening the College-wide Inclusion, Diversity, and Equity Committee to collaboratively produce the College's first Diversity Strategic Plan (Appendix B) highlighting the recruitment and retention of diverse faculty and staff as a priority. In 2017, ESF will welcome its first campus Chief Diversity Officer, to provide an executive level of leadership to the diversity initiatives on campus. Through the use of the Collaborative on Academic Careers in Higher Education (COACHE) survey, ESF will have access to baseline data that reflect how faculty perceive their work environment on a number of issues, including diversity. In anticipation of an opportunity to improve this area, activities to develop cultural competency in faculty and staff are in the planning stages and will be implemented beginning in Fall 2017. These programs will focus on opportunities to help faculty and staff develop an understanding of the concepts of privilege, micro-aggressions, tokenism, intersectionality, and other diversity and equity related themes. With the leadership of the incoming CDO, the Collegewide Inclusion, Diversity, and Equity Committee will continue the work started under the guidance of the Interim CDO with consistent input from faculty, staff, and students.

In recognition of the dramatic demographic shifts on college campuses nationwide, ESF acknowledges the need to incorporate culturally responsive pedagogy and the necessity of providing support services to enhance student success for our students as critical elements of institutional success. The new administrative positions and responsibilities were established in 2015, as well as new communication and training programs throughout the campus. Part of the new communication program at ESF with respect to diversity and inclusion included redesigning the Student Diversity and Inclusion website, establishing student affinity groups, and developing mentoring opportunities for faculty and staff. The results of these actions have expanded the voice of ESF stakeholders through the introduction of resolutions to change campus policy driven by Academic Governance, Undergraduate Student Association, and Graduate Student Association, many of which have resulted in more inclusive policies and practices at ESF. Work toward effective recruitment and retention of diverse faculty and staff at ESF is ongoing with regard to spousal employment, salary structure, startup funds for new faculty hires, replacing faculty who separate, and merit-based raises for faculty and staff.

	Fall	Fall	Fall	Fall	4-Year
	2013	2014	2015	2016	%Change
Faculty & Staff Total	582	581	590	584	0.0%
Full-Time	354	354	354	353	0.0%
Part-Time	228	227	236	231	1.3%
Campus % Full-time	60.8%	60.9%	60.0%	60.0%	-1.3%
White Non-Hispanic	485	485	502	498	2.7%
All Minorities	41	41	44	45	9.8%
Black Non-Hispanic	11	11	13	11	0.0%
Hispanic	9	9	10	10	11.1%
Asian/Pacific Islander	18	18	17	18	0.0%
Native American/Alaskan	2	2	3	3	50.0%
Two or More Races	1	1	1	3	200.0%
Underrepresented Minorities <sup>1</sup>	23	23	27	27	17.4%
Non-Resident Alien	55	55	44	41	-25.5%
Campus % All Minorities	8.5%	8.5%	8.7%	9.0%	5.9%
Campus % Underrepresented	4.7%	4.7%	5.4%	5.0%	6.4%
Minorities					
Full-Time Faculty & Staff Total	354	354	354	353	0.0%
Male	216	216	217	212	-1.9%
Female	138	138	137	141	2.2%
Campus Full-Time % Male	61.0%	61.0%	61.3%	60.0%	-1.6%
Campus Full-Time % Female	39.0%	39.0%	38.7%	40.0%	2.6%

Table 2: Faculty	& Staff Diversit	y Trends
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<sup>1</sup> Underrepresented Minorities includes Black, Hispanic, Native American/Alaskan, and Two or More Races. Source: IPEDS HR Survey, SUNY BI Dashboard Beyond diversity and inclusion initiatives, the faculty at ESF enjoy publication success and professional voice through a variety of outlets. Collectively, ESF faculty have published 1,296 articles from 2011-2015, and these articles were cited in other publications 7.883 times. Additionally, over the past five years faculty have led or participated in workshops and training sessions to enhance and develop continuing education programs for non-traditional students and industry professionals. Faculty have also created venture start-ups and supported a student in creating a venture start-up, and at least ten other students and faculty have engaged with the SUNY Research Foundation Entrepreneur-in-Residence program. Other partnerships include collaboration with civic organizations and higher education institutions to support and promote research and start-up companies within the scope of the College's environmental and sustainability focus. In 2015, ESF had the second highest per capita research expenditure, at \$120,000 per research faculty member. Additionally, the strength of student-led conversations, programming, and activism on campus to support diversity, equity, and inclusion is well supported at all levels of the institution and we are making progress in achieving a diverse student body, with increases of 3% to 5% on institutional diversity metrics such as students of color and gender. The College-wide Inclusion, Diversity, and Equity Committee provides guidance oversight, and advice to campus in matters related to a broad interpretation of diversity, and through this lens the Committee has developed a College Diversity Statement and Diversity Strategic Plan that includes plans and strategies for assessment and reporting, while enhancing communications on campus-wide diversity and inclusion-related processes. The intersection of a commitment to campus diversity and inclusion, as evidenced by a senior level administrative position leading this initiative, combined with successful research collaboration and funding development facilitates ESF's ability to attract and retain quality faculty from diverse backgrounds and experiences.

### 3. Rectifying inefficiencies created by an aging administrative infrastructure

The administrative infrastructure at ESF poses potential constraints on the institutional effectiveness, but with creative and strategic planning, ESF has succeeded in overcoming some of these challenges since the self-study in 2011-2012, and students, faculty, and staff have succeeded in adapting to the physical limitations of having a small campus with little space to expand facilities. Many accomplishments are through improved connectivity and digital infrastructure. For example, there are plans to secure a telecommunications tower at the Ranger School to accompany the institutional commitment to upgrading cellular communications across the College properties. Additionally, Wi-Fi accessibility and bandwidth improvements are ongoing throughout campus. In addition to these digital upgrades, the ESF Gateway Center was completed in 2013 and is a high performance building that provides a centerpiece for campus activities, explores financially feasible and technologically sound strategies to operate using renewable energy, produces its own power, demonstrates a carbon-neutral facility, and conserves resources in innovative ways. In order to effectively lead these improvements and adaptations,

ESF in currently searching for a Chief Information Officer and will hire for this position in the near future. This individual will also oversee the implementation of improvements to Information Technology infrastructure going forward.

Located within Gateway Center is a combined heat and power plant that provides heat and electricity to a significant portion of campus, while a newly installed controller improves operational efficiency. In addition to these structural upgrades and improvements to campus sustainability, ESF has also implemented improvements to campus operations. For example, the new internal control protocol at ESF exceeds the requirements of SUNY policy to ensure accurate and appropriate allocation of institutional resources, which better positions ESF to certify the internal control program as required each year by SUNY campus presidents. In addition, the Office of Human Resources at ESF is engaged in succession planning to maintain the institutional knowledge base necessary to conduct business and maintain internal controls, providing leadership training to aid managers at all levels within ESF, as well as developing online appointment processes for new hires. As these efforts develop, the effective documentation and implementation of policies institution-wide will also be addressed. While these improvements do not address all administrative inefficiencies at ESF, they are moving the institution toward a more efficient and sustainable infrastructure in the future.

## 4. Establishing and defining the College's position/brand in a remarkably changing global arena

Unsurprisingly, ESF's institutional actions since the 2011-2012 Sustainability-focused self-study have been driven by increasing national and international visibility for the College, which has contributed to improvements in out-of-state enrollments. This has been achieved and supported by involvement in nationwide and worldwide organizations and activity, both by ESF leadership as well as faculty. The result of the intense sustainability focus on campus is our highly competitive position in the Sustainability Tracking, Assessment, & Rating System (STARS) program for sustainability initiatives, currently holding a 73.03 score and a Gold rating as of the June 2016 submission to the program. In addition to our efforts to achieve a Platinum rating in the future, ESF is also outward looking, as evidenced by the development of new academic programs that respond to and meet societal needs and student interests on topics around sustainability. As part of this focus, experiential learning on College "forest" properties, as well as international and domestic opportunities in place across departments, allows students to study the natural world outside the classroom or laboratory. The involvement of ESF faculty, staff, and leadership in nationally recognized events, such as participation in Earth Day events in Washington, DC and our role in launching the Planet Forward University Consortium, contributes to the institutional position and brand as a leader in environmental and sustainability education and research. Further evidence of this improved visibility includes 7% growth in outof-state enrollment, a 156% increase in visibility in national and statewide media, and approximately 1.2 million unique visitors to the ESF website per year. Additionally, the ESFproduced television segment Going Green provides 16 minutes of television exposure each week across upstate New York at no direct cost to ESF beyond production time. Additionally, ESF's

"Top 10 New Species" list has resulted in hundreds of media placements and more than 800,000 unique visitors to that area of the ESF website over the past two years. In addition to the vital role of the Office of Communications in establishing and promoting the College's brand in the national and global arena, faculty and graduates also play an important role in promoting ESF's position in the global marketplace.

Faculty research initiatives have been promoted in the media to increase College visibility, and the Northern Forest Institution for Conservation Education and Leadership Training promotes interdisciplinary education, outreach, and leadership training dedicated to enhancing the human and natural communities in the Adirondacks and Northern Forest Region. In addition, ESF faculty and students enjoy productive collaboration with the New York State Department of Environmental Conservation and New York Natural Heritage Program to support teaching and research in conservation science and sustainable management. The important role faculty play in these branding efforts is echoed through their contact and relationships with students. In 2014, ESF's Career Services Office administered the *First Destination* survey and received a 72% response rate from under graduates. Of those respondents, 91% reported employment within six months of commencement. Additionally, 89% of alumni had secured positions directly related to their studies at ESF. In part, this can be attributed to College alumni working for regional companies actively participating with the Career Services Office at the Environmental Career Fair hosted by ESF each year. To further our brand, the ESF in the High School program engages nearly 700 students in 36 regional high schools each year, and with new and ongoing programs, it continues to enrich STEM student learning and teacher professional development. ESF has taken myriad steps to be visible in areas that benefit both the Central New York region, as well as to gain visibility statewide, nationally, and internationally in order to promote sustainability practices and environmental education, which helps establish the institutional brand and promote the College mission, vision, and values.

## 5. Enhancing and institutionalizing assessment practices to help drive institutional objectives

ESF's engagement with both institutional assessment and the assessment of student learning throughout the institution have been well documented through several MSCHE requested follow up, monitoring, and progress reports since the 2011-2012 self-study, but there are specific steps the institution has taken to further institutionalize assessment practices as a way to promote institutional objectives, strategic planning, and continuous improvement at all levels. In February 2016, the institution's first Assistant Director of Assessment and Institutional Research began to coordinate and provide leadership for assessment efforts, as well as to serve as a single point of contact for institutional data requests. The Assistant Director for Assessment and Institutional Research works to illuminate the alignment between institutional data and assessment practices to effectively document institutional improvement. The most notable result of the institutional action to add this professional staff member is to provide leadership and consultation for academic and institutional assessment in a visible way. To increase the culture of assessment in

order to continue data driven decision-making throughout the campus, Academic Governance has approved the formation of an Assessment Committee at ESF to further formalize the culture of assessment at ESF as a logical and necessary next step to establishing campus-wide assessment as a priority at ESF.

## 6. Meeting enrollment objectives in the face of new competitive programs within and outside of SUNY

ESF recognizes the importance of meeting both recruitment and retention goals as essential strategies to meet enrollment objectives. Additionally, shifts in statewide priorities and policies, and the April 2017 creation of the New York State Excelsior Scholarship, available for students beginning in Fall 2017, also affect how ESF plans to meet enrollment objectives. The Excelsior Scholarship provides the financial incentive to pursue higher education at New York State public colleges and universities by offering in-state students a tuition-free opportunity. This program has the potential to support efforts to increase enrollment at the College, as many ESF undergraduate students are residents of New York State and may be eligible for the scholarship program. These institutional objectives align with SUNY System initiatives, and are included in the SUNY Excels Performance Improvement Program. Success with branding and expanding our reach nationally and internationally has driven out of state and international enrollment in recent years, and to complement these increases ESF has established and expanded academic supports since the 2011-2012 institutional self-study. ESF supports programs to provide coaching and mentoring to academically at risk students through the SEEDS program and other programs, and partnerships have been established between University Police and the Athletics Office to provide mentorship to individual teams on campus, particularly with regard to Title IX work. Despite not having college-owned athletics facilities, approximately 9% of the undergraduate population participates in ESF athletics, which is 87% funded through the SUNYapproved athletics fee. Additionally, ESF's Writing Center has documented growth through nearly doubling the appointments made in 2013-2014 (357) to 788 appointments in 2014-15. The Division of Student Affairs also sponsors the *Think About It* program during new student orientation to encourage good decision-making, with recorded student participation reaching almost 96%.

In addition to supporting student retention, ESF has also engaged opportunities to increase outof-state and international undergraduate enrollment. Since Fall 2011, ESF has recorded a 3.6% increase in out-of-state student enrollment and this is trending upward, due in part to greater institutional visibility nationally and internationally. With respect to international undergraduate student recruitment, ESF has established a partnership with Beijing University of Chemical Technology to bring fifty undergraduate seniors to the Syracuse campus to complete their studies in the Bioprocess Engineering program. Undergraduate enrollment at ESF has increased 22% since 2005, with out-of-state enrollment growing from 17% to 24% during that time. ESF also has a high transfer student population, with more than 40% of incoming undergraduates enrolling as transfer students; this is reflective of strong articulation agreements with other higher education institutions, including each community college in the State University of New York system. Recruitment is also supported through the success of the Financial Aid office, which served a record 1,733 students in Fall of 2015, awarding 62% of this record undergraduate enrollment institutional aid, and approximately 80% of that class was awarded some form of financial aid. The Excelsior Scholarship, New York State's new in-state tuition-free public college incentive program, will also affect how the Office of Financial Aid supports student recruitment, retention, and success. However, the full impact of this program on ESF students will become clearer in coming years.

Going forward, the College will engage in online education to continue meeting enrollment goals while the campus size limits the ability to continue this upward trend of enrollment growth for on-campus students. Not only is recruitment, retention, and financial aid packaging effective, ESF graduates reflect one of the lowest student loan default rates in the System, with fewer than 4% of students defaulting on their education loans at three years. This is roughly 3% below the SUNY System average default rate. The actions the College has taken since the last self-study, and the results of those actions, demonstrate the ability as an institution to meet enrollment objectives within the physical constraints of campus space, to take proactive measures to meet enrollment objectives through online education, and to assist students in meeting their higher education-related expenses.

### 7. Achieving our diversity targets within our student population

With the support of the SUNY System, ESF is actively engaged in achieving greater student diversity on campus. In five years, the population of students of color at ESF has increased by 44.3%, with a 66.3% increase in the population of students who identify as Black, Hispanic, Native/American, or two or more races (Table 3). Additionally, the population of female students has increased by 11.5% between Fall 2009 and Fall 2014, and we are nearing 50% of the student body at ESF identifying as female (Table 3). Beginning in the summer of 2017, the College's first Chief Diversity Officer will arrive, and provide leadership to the College-wide Inclusion, Diversity, and Equity Committee as well as continue the work to implement the Diversity Strategic Plan (Appendix B) at ESF, which highlights recruitment and retention of diverse faculty, staff, and students. Additionally, ESF has a well-established SEEDS program to provide coaching and mentoring to academically at-risk students, as well as the College Science and Technology Entry Program (CSTEP) grant which was renewed through 2020. CSTEP is a New York State grant-funded initiative designed to foster academic excellence for underrepresented or economically disadvantaged full-time college students majoring in a science, technology, engineering, math, or pursuing education for a licensed profession such as allied health or social work. These actions were supplemented by new communication and training programs as well as new administrative positions and responsibilities that were instituted in 2015, including the re-creation and re-branding of the Student Diversity and Inclusion Office, establishing student affinity groups to support our underrepresented student populations, and enhancing supports for faculty and staff around diversity-related topics. These steps toward

continuously developing an inclusive campus community, particularly through highlighting its importance through campus-wide collaboration, the development of a Diversity Strategic Plan (Appendix B), and establishing the Chief Diversity Officer as a senior-level leader at the College, provide an essential framework for ESF to continue expanding the diversity within our campuswide populations.

Racial/Ethnic	Fall	Fall	Fall	Fall	Fall	5-Year
Diversity	2012	2013	2014	2015	2016	Percent
						Change
<b>Total Students</b>	2,242	2,208	2,190	2,209	2,171	-3.2%
White Non-	1,849	1,784	1,725	1,714	1,660	-10.2%
Hispanic						
All Minorities	204	193	236	258	269	31.9%
Black Non-	30	29	36	32	34	13.3%
Hispanic						
Hispanic	56	61	83	107	108	92.9%
Asian/Pacific	66	55	65	66	72	9.0%
Islander						
Native	7	7	8	5	7	0%
American/Alaskan						
Two or More	45	41	44	48	48	6.7%
Races						
Underrepresented	138	138	171	192	197	42.8%
Minorities						
Non-Resident	188	186	170	155	153	-18.6%
Alien						
Unknown	1	45	59	82	89	-
Campus % All	9.1%	8.7%	10.8%	11.7%	12.4%	36.3%
Minorities						
Campus %	6.2%	6.3%	7.8%	8.7%	9.0%	45.2%
Underrepresented						
Minorities						
Gender Diversity	Fall	Fall	Fall	Fall	Fall	5-Year
	2012	2013	2014	2015	2016	Percent
						Change
Total Students	2,242	2,208	2,190	2,209	2,171	-3.2%
Male	1,234	1,217	1,190	1,180	1,137	-7.9%
Female	1,008	991	1,000	1,029	1,034	2.6%
Campus % Male	55.0%	55.1%	54.3%	53.4%	52.4%	-4.7%
Campus %	45.0%	44.9%	45.7%	46.4%	47.6%	5.8%
Female						

**Table 3: Student Diversity Trends** 

In addition to the modest gains ESF has made with regard to diversifying the student body, the Diversity Strategic Plan (Appendix B) highlights support for these underrepresented students

throughout their academic and co-curricular experiences at ESF. A priority for the College-wide Inclusion, Diversity, and Equity Committee is to improve the cultural competency of faculty and staff in order to create an increasingly inclusive environment for students. The overarching goal is to, "Ensure that the College commitment to diversity and inclusion is apparent and embedded at all levels of the institution." The appointment of a permanent, senior-level Chief Diversity Officer for the campus, which will provide leadership to the College-wide Inclusion, Diversity, and Equity Committee going forward, is the first step in visibly prioritizing these values at all levels of campus. Programming opportunities are currently in the planning stages with expected implementation of the first workshop to occur in Fall 2017. One priority that may have a great impact on recruitment and retention is ensuring that the visual representation of the College is consistent with the student experience. The College-wide Inclusion, Diversity, and Equity Committee will have access to baseline data from the National Survey of Student Engagement, which was administered in Spring 2016 and included a topical module specifically covering "Inclusiveness and Engagement with Cultural Diversity." This diagnostic tool, used in concert with campus-level listening sessions and other initiatives, will help guide the work being done on campus to support inclusion, diversity, and equity at ESF. Implementing the Diversity Strategic Plan (Appendix B) will be an essential step in supporting the institutional mission, as the strategies outlined in this plan will assist ESF in becoming increasingly responsive to the everchanging world both via a robust curricular and co-curricular experience for the College community.

## 8. Effective engagement of campus community in understanding and addressing institutional goals

Sustainability is central to ESF's mission of providing outstanding teaching, research, and outreach programs that foster sustainable communities and environments. ESF is committed to developing creative and effective solutions to sustainability challenges and adopting holistic practices and approaches that balance environmental social, economic, and technological factors. This commitment to environmental sustainability is a consistent thread throughout the ESF administration, faculty, student, and staff community and provides an avenue for effective engagement of the campus community in understanding and addressing institutional goals. Since the 2011-2012 reaccreditation self-study, ESF has engaged the campus in broad conversations about institutional priorities in a number of ways. Primarily, the Vision 2020 Update: Bridging from 2016 to 2020 and Beyond (Appendix A) was a campus-wide effort that provided a bridge to the 2003 strategic plan, Vision 2020, and allowed the campus to reflect upon our progress toward the goals stated in the original document. This process of developing the updated bridging document was completed in May 2016. An ongoing process at ESF is the campus institutional priorities document that Executive Cabinet drafted and each unit leader promoted through the functional area they are responsible for. The institutional priorities document is developed through the lens of the strategic plan, and provides a blueprint for how to best achieve the goals stated therein. In addition to institutional strategic planning and prioritizing, faculty and staff are

engaged in supporting and achieving institutional goals individually as well. For example, faculty advising and other support of student clubs across departments has increased faculty-student interactions with almost 40 recognized clubs on the ESF campus. Human Resources is supporting institutional goals and effectiveness by leading efforts in succession planning in order to maintain the base knowledge within the organization to effectively conduct business and maintain internal controls, and offering leadership training to aid managers at all levels within ESF.

There are several mechanisms by which campus leadership communicates institutional goals to the campus community and solicits feedback from stakeholders regarding these goals. Executive Cabinet is one of the primary methods for senior leadership to communicate institutional goals and priorities to the various administrative units on campus. Additionally, the President has established a weekly Leadership Council meeting, consisting of various campus stakeholders, in order to address concerns at various levels of the campus community including students, faculty, and union-represented staff. Academic Governance meetings and committee population also work to disseminate information to assist the campus community in understanding and embracing institutional goals. Finally, the President's Office publishes periodic Presidential Updates via e-mail, and the President offers an annual State of the College address in order to ensure that all members of the campus community are aware of institutional objectives.

## 9. Fitting ESF's strategic plan within the SUNY Strategic Planning Objectives to obtain benefits of System membership

With a new Chancellor for the SUNY System who understands STEM education and embraces sustainability initiatives, ESF is in a strong position to enjoy the full benefits of System membership. SUNY System has encouraged campuses to participate in the SUNY Excels Performance Improvement Program (PIP), which ESF has benefitted from through aligning institutional goals with broader system-wide objectives. This, in addition to on-campus initiatives to support System goals and relationships with other SUNY institutions to support the concept of "systemness," position ESF to obtain the benefits of membership in the State University of New York system of public higher education. A result of these actions includes a partnership with Alfred State College to provide technical and engineering support to the Biorefinery Development and Commercialization Center and the New Forest Economy, putting a particular focus on bioprocessing, chemistry, landscape architecture, and forest management. ESF has also partnered with Binghamton University to develop an active program for intellectual property management, and ESF is a leader in the use of Minority-and-Women-Owned Business Enterprises consistently ranking in the top five of all SUNY schools. The College has also prioritized diversity and inclusion, as SUNY System has expressed that campuses should reflect the diversity of the state. The College-wide Inclusion, Diversity, and Equity Committee was established to provide guidance, oversight, and advice to campus in matters related to a broad interpretation of diversity and has developed and communicated a diversity statement and strategic plan to guide ESF forward in this initiative. ESF has consistently met or exceeded the

targets and expectations SUNY System has articulated, and we continue to strive for excellence in order to realize the benefits of System membership.

### 10. Maintain effective relationships with Syracuse University and other partners

In 2016, ESF finalized negotiations with Syracuse University for a new five-year contract. This contract maintains the strong relationship with Syracuse University as well as ensures ESF students have access to some of the resources available on their campus, including accessory instruction, an agreement between ESF and SU where students can take up to 16 credits of instruction. Additionally, many academic departments have international and domestic opportunities in place for students to study outside the classroom. ESF is also developing green infrastructure and environmental entrepreneurship programs with partners including Syracuse University and the United States Department of Agriculture (USDA) Forest Service. The Department of Environmental Conservation and the Environmental Protection Agency (EPA) are also important partners for ESF.

In addition to Syracuse University and SUNY System partnerships, ESF maintains effective relationships with nearby Upstate Medical University and the Veterans Administration Medical Center, other higher education institutions in the region, nationwide and international organizations, and federally-sponsored organizations such as USDA, National Science Foundation (NSF), and National Institutes of Health (NIH). ESF is a founding partner of the Great Lakes Research Consortium, which involved 18 United States universities and 9 Canadian affiliates; ESF provides the Executive Director and administrative offices for this group. Many regional public, private, and educational organizations are working to establish the Onondaga Lake Science Center, which will provide research and education to support the ecological health of Onondaga Lake. Additionally, the Career Services Office at ESF maintains effective partnerships with regional employers, who participate in the annual Environmental Career Fair hosted at the College. High school students are engaged with ESF through the successful ESF in the High School program which is established at 36 regional high schools, and ESF continues to enrich STEM student learning and teacher professional development with new and ongoing programs. Faculty and leadership continue to maintain effective relationships with public, private, and educational partners to support the institution, the surrounding community, and the planet.

### Section 4: Enrollment and Finance Trends and Projections

### Overview

As part of the State University of New York System, ESF is fully engaged with enrollment and finance trending and projections to fulfill System expectations, and to ensure campus financial health and viability. Part of this process includes participation in the SUNY Excels Performance Improvement Program, for which all data tables were updated in March 2017. These enrollment projections are the most recent available and are aligned with institutional and System performance priorities. Since the IPEDS Finance survey is prepared at the System level, the data are derived from figures reported in the SUNY's audited financial statements. However, as one of the SUNY System's 64 campuses, ESF does not produce an institutional audited financial statement. Consequently, there is no ESF-specific management letter or financial statements. Furthermore, individual SUNY campuses do not have borrowing authority and therefore do not, on their own, incur long term debt. The state bonds for the campus's various capital needs. Benefits of engaging in enrollment planning and projections through these System-wide activities include discussion about the assessment of current enrollment trends, aspirational planning on a routine and periodic basis at the campus level, and linking enrollment projections to competitive funding available at the System level for continuous improvement.

### **Enrollment Planning and Projections:**

As part of the SUNY Excels Performance Improvement Program (PIP) planning, the College was asked to project undergraduate and graduate student headcount enrollment for Fall 2018 and 2020, with an update on progress submitted in March 2017. From 2011 through 2016, ESF data show a marginal overall increase in undergraduate student headcount, with increasing enrollment projections included in the ESF Performance Improvement Plan proposed to SUNY System. This enrollment planning process is part of a competitive funding application to collaborate with the SUNY System to support state-wide and institutional initiatives. Increased funding at the System level would allow ESF to support SUNY access, completion, success, inquiry, and engagement initiatives as System-wide sustainability hub.

Student Headcount	Fall	Fall	Fall	Fall	Fall	5-Year Percent
Enrollment	2012	2013	2014	2015	2016	Change
Total Students	2,242	2,208	2,190	2,209	2,171	-3.2%
% Full-time	91.8%	93.2%	93.7%	94.3%	94.3%	2.7%
% Undergraduate	75.6%	76.4%	78.3%	79.1%	80.1%	5.9%
Total Undergraduate	1,696	1,688	1,715	1,747	1,738	2.5%
Students						
% Full-time	97.5%	96.7%	97.4%	98.4%	97.6%	0.0%
Full-time Undergraduates -	1,653	1,633	1,671	1,719	1,696	2.6%
Total						

#### **Table 4: Trends in Fall Student Enrollment**

Student Headcount	Fall	Fall	Fall	Fall	Fall	5-Year Percent
Enrollment	2012	2013	2014	2015	2016	Change
Full-time First-time	325	288	332	318	327	-1.1%
Full-time Transfers	205	233	233	255	246	20.0%
Full-time Continuing &	1,123	1,112	1,106	1,146	1,123	0.0%
Returning						
Student Headcount	Fall	Fall	Fall	Fall	Fall	5-Year Percent
Enrollment	2012	2013	2014	2015	2016	Change
Total Graduate Students	546	520	475	462	433	-21.0%
% Full-time	78.2%	81.7%	80.4%	78.6%	81.3%	4.0%
Full-time Graduates Total	427	425	382	363	352	-17.6%
Full-time First-time Graduates	100	95	83	95	73	-27.0%
Full-time Transfer Graduates	24	16	15	12	13	-45.8%
Full-time Continuing &	303	314	284	256	266	-12.2%
Returning Graduates						
Part-time Graduates without	107	95	93	99	81	-24.3%
FT Memo						
Graduate Students by Level	Fall	Fall	Fall	Fall	Fall	5-Year Percent
	2012	2013	2014	2015	2016	Change
Graduate Certificates	7	1	2	2	0	-
Master's Programs	350	352	316	281	268	-2.3%
Doctoral Programs	189	167	157	179	165	-12.7%

ESF has experienced some fluctuations in undergraduate and graduate enrollment counts, but overall we are still keeping pace with our SUNY approved enrollment plans. The projection for enrollment growth from the 2016-2017 academic year through the 2019-2020 academic year anticipates a 1.5% - 1.9% increase in total headcount each year. Most of our on campus enrollment growth has been in undergraduate enrollment, reflecting approximately a 5.0% increase. Graduate enrollment has declined over the past five years, which may be attributed to political and economic uncertainties in the disciplines ESF's graduate programs support.

The development of the ESF Open Academy, an online education initiative for which ESF submitted Substantive Change Requests to MSCHE in March 2017, is intended to provide a novel and enduring revenue source that transcends the physical space limitations on campus. This shift in access and instructional delivery is reflected in the projected decrease in full-time enrollment, as reported on the SUNY Excels PIP table "Trends in Fall Student Enrollment and AAFTE." Historically, ESF has enjoyed a percentage of full-time undergraduate enrollment in excess of 95%. However, in appreciation of the system and institutional initiatives supported by ESF Open Academy enrollment, we expect the concentration of full-time undergraduate enrollment to decline by approximately 2% by Fall 2018, and by another 2% by Fall 2020.

Another important strategy ESF is engaging with, in collaboration with the system-wide initiative to become a well-known national public university system, is to increase the out-of-

state and international student populations. Using the SUNY Excels PIP data tables, we are making progress on this initiative, which will impact both the financial and enrollment projections.

	Fall	Fall	Fall	Fall	Fall	5-Year Percent
	2012	2013	2014	2015	2016	Change
<b>Total Students</b>	2,242	2,208	2,190	2,208	2,171	-3.2%
Percent New	78.6%	78.4%	78.4%	79.1%	77.7%	-1.1%
York State						
Percent U.S.	13.2%	13.4%	14.2%	14.1%	15.6%	18.2%
Non-New York						
Percent	8.2%	8.2%	7.4%	6.7%	6.7%	-18.3%
International						
Undergraduate	1,696	1,688	1,715	1,747	1,738	2.5%
Students						
Percent New	83.1%	83.5%	81.6%	82.5%	80.3%	-3.4%
York State						
Percent U.S.	15.2%	14.8%	16.3%	15.7%	17.7%	16.4%
Non-New York						
Percent	1.8%	1.7%	2.1%	1.8%	2.0%	11.1%
International						
Graduate	546	520	475	462	433	-20.7%
Students						
Percent New	63.6%	61.8%	66.6%	66.3%	67.7%	6.4%
York State						
Percent U.S.	7.3%	8.8%	6.7%	8.4%	6.9%	-5.5%
Non-New York						
Percent	27.8%	29.4%	26.7%	25.1%	25.4%	-8.6%
International						

**Table 5: Trends in Geographic Diversity of Students** 

The undergraduate first-year student retention rate is strong, which suggests success in developing and promoting positive student educational experiences and outcomes on the ESF campus.

	as of Fall	as of Fall 2010	as of Fall 2011	as of Fall 2012	as of Fall 2013	as of Fall 2014	5-Year Percent		
Einst Times E	2009	Cturd out Dot	antion				Change		
FIFST-Time Full-Time Student Ketention       Entoring     2008       2009     2010       2011     2012       5     X									
Fall	2008	2009	2010	2011	2012	2013	9-1 ear Percent Change		
First-Time, Full-Time In a Program Cohort	310	283	256	287	324	288	-7.1%		
Campus	80.3%	87.3%	82.8%	86.4%	85.8%	84.0%	4.6%		
First Year Retention Rate									
Sector First Year Retention Rate	88.4%	88.4%	88.8%	88.1%	88.0%	87.4%	-1.1%		
National Public First Year Retention Rate	78.6%	79.5%	79.3%	79.2%	n/a	n/a	-		
Transfer Ful	l-Time St	udent Reten	tion						
Entering Fall	2008	2009	2010	2011	2012	2013	5-Year Percent Change		
Transfer, Full-Time In a Program Cohort	165	211	197	230	190	221	33.9%		
Campus First Year Retention Rate	72.7%	74.9%	73.1%	77.8%	75.8%	76.9%	5.8%		
Sector First Year Retention Rate	80.4%	82.3%	81.0%	81.3%	80.6%	80.5%	0.1%		
available from the Integrated Post Secondary Education Data System (IPEDS).									

### **Table 6: Trends in First Year Retention**

A more granular view of the campus retention rate from first to second year over the past five years is reflected in Table 6. The male and female retention rates from first-year to second year

are comparable, with retention of female students being slightly higher than that for male students. Underrepresented Minority Cohorts (URM Cohorts) include students who self-identify as Black or African American, American Indian or Alaskan Native, Hispanic or Latino, and Two or More Races. The total minority cohort rate includes Asian students as well. This distinction was established by SUNY for the purposes of the SUNY Excels PIP development, in order for institutions to assess their success in student retention using a variety of indicators. As ESF is a small campus, and currently engaged in a strategic initiative to improve campus diversity, including within student populations, the population size as appropriate for each cohort is also reported.

First Time Students	2010	2011	2012	2013	2014	2015	
Entering Fall	(N=259)	(N=289)	(N=322)	(N=286)	(N=331)	(N=320)	
Total Retention Rate	74%	79%	76%	77%	79%	80%	
Male Retention Rate	72%	77%	75%	77%	73%	78%	
Female Retention Rate	77%	80%	77%	76%	87%	81%	
All Minority Cohorts	n=29	n=26	<i>n</i> =43	n=36	n=73	n=54	
All Minority Retention	76%	69%	58%	69%	70%	78%	
Rate							
URM Cohorts	n=13	n=15	n=31	n=24	n=46	n=36	
URM Retention Rate	46%	67%	52%	71%	65%	72%	
*Undergraduate international student population $n = 3$ or fewer							
International Retention	67%	100%	100%	100%	n/a	n/a	
Rate*							

 Table 7: Undergraduate Persistence First Year to Second Year by Gender, Race/Ethnicity, and Citizenship

### **Financial Planning and Projections:**

Beginning with the economic downturn of 2008, there were a series of reductions in the level of state support to SUNY, and in turn the system's individual campuses. These reductions continued annually from 2008 - 2012, resulting in a 19% reduction in ESF's state support. Since 2012, state support for the College has remained stable. However, in order to address the reductions in state support, ESF aggressively managed expenditures while at the same time sought to increase other revenue sources. To address expenditures, the College left vacant a number of faculty and staff positions, instituted a series of 10% reductions in departmental expense budgets, and addressed energy consumption with a number of energy saving initiatives including recalibrating laboratory fume hoods, increasing the set points on air conditioning units, and bringing on line a new combined heat and electrical power plant, which when fully commissioned will offset approximately 20% of the campus electricity usage and 60% of its heating load.

Key initiatives in developing revenue sources include steadily increasing the percentage of outof-state students, investing in additional Development staff to increase the amount of unrestricted gifts to the College, enhancing our online presence, and advancing sales of timber from its forest properties. The five-year percent change in total out-of-state enrollment is a 9.9% increase since Fall 2011, suggesting that out-of-state recruitment efforts and initiatives to be nationally visible are attracting students from outside of New York State. International undergraduate student recruitment is also impressive, showing a 52% increase in the number of undergraduate students from outside of the United States from Fall 2011 through Fall 2016. Upward trending of alumni donors, campus alumni giving rate, and an 83.5% increase in overall philanthropy serve as evidence that these investments in the Development Office have increased philanthropy to the College. As a result of these efforts, the College has stabilized its financial condition while providing a platform from which to make necessary investments to grow and thrive. These efforts will provide the College with the fiscal stability necessary to safeguard against unexpected changes in the economic landscape. In addition, the SUNY system has reserves available to provide any institution should any serious financial circumstances arise. Taken together, the enrollment and finance projections provide assurance of a sustainable future for ESF.

### Section 5: Organized and Sustained Processes to Assess Institutional Effectiveness and Student Learning

### Overview

At ESF, we have invested a great deal of effort into improving the assessment of institutional effectiveness and student learning through the use of TracDat software for all administrative units and academic programs, the hiring of an Assistant Director for Assessment and Institutional Research to guide assessment efforts and manage assessment information at the College, and campus wide attention to the value of institutional assessment to support student success. The policy on institutional effectiveness states:

### Institutional Effectiveness Assessment Policy at ESF

Assessment is an integral part of ESF's commitment to the continuous improvement of all functions that contribute to fulfilling the institution's mission -- "to advance knowledge and skills to promote the leadership necessary for stewardship of both the natural and designed environments."

Assessment specifically measures success in meeting defined goals at the institutional and administrative/academic unit levels. Unit level goals should be directly linked to and support the larger institutional goals to ensure that all campus elements are working with common purpose.

Assessment results should be obtained and evaluated through thoughtfully planned processes. They should be used to develop annual work plans that move the institution forward in meeting its mission and goals.

As a research university, in which objective empirical observations are valued as the foundation of knowledge, we recognize that data-based assessment is necessary for self-understanding and advancement, and thus essential for the growth and vibrancy of the institution.

At ESF the following specific statements guide our efforts.

- All administrative units shall have a mission statement, goals, outcomes and a plan to assess them.
- All assessment plans shall conform to Middle States Higher Education Commission standards.
- All assessment plans shall conform to the Mission and Goals of the ESF strategic plan.
- All administrative units shall articulate assessment efforts that will be reviewed annually. It is expected that data collected, assessments conducted, response to assessments, and adjustments to assessment plans will be discussed annually with the respective Vice Presidents overseeing each unit.

• All assessment plans and results shall be made publicly available on the ESF assessment web page.

The College's strategic plan, *Vision 2020*, provides the foundation for institutional assessment. All administrative unit goals are aligned with institutional priorities and the seven goals of *Vision 2020*, and assessment plans and reports are revised and reviewed annually. Units collect assessment data throughout the year and draw from regularly administered faculty, staff, and student surveys, including the SUNY Sexual Violence Prevention Survey, SUNY Student Opinion Survey, National Survey of Student Engagement, and the Annual Graduated Student Placement Survey. Assessment data are maintained by the Assistant Director of Assessment and Institutional Research and stored within the institution's TracDat software. These data are collected and used to determine effectiveness of achieving annual targets of unit goals. Institutional and unit-level data are also used collectively to assess institutional priorities and Vision 2020 strategic plan goals on an annual basis. Administrative unit assessment goals, targets, measures and outcome reports are posted on the ESF Assessment website (www.esf.edu/assessment).

In addition to on-going internal program assessment, all undergraduate programs at ESF undergo external review on a five-year cycle and make the best use of external program accreditation efforts. External program reviews include assessment of programs by external experts from an institutional perspective to determine their societal relevance in addition to the details of curriculum, assessment, and management of the program internally. Reports of external program reviews are incorporated into institutional assessment practices through the Associate Provost for Instruction and the Provost reporting on institutional goals. More information on external assessment is located on the ESF Assessment web page.

### **Standard 7: Institutional Assessment**

The institutional strategic planning documents, *Vision 2020* and *Vision 2020 Update*, inform the design of administrative and academic assessment planning, implementation, and resulting actions. While in the earliest stages of institutional assessment at ESF, the documentation of institutional assessment activities was maintained in hard copy. ESF then invested in a subscription to TracDat software to document, organize, maintain, and analyze assessment information for all administrative and academic units at the College. The Assistant Director of Assessment and Institutional Research provides leadership and training to campus stakeholders who are responsible for entering this information, as well as periodically reviewing the data entered into the system to ensure participation and to identify any units that might require assistance with compiling and entering their assessment data each year. In 2013, at the annual Full Cabinet Retreat, the institution devoted efforts to identify the most appropriate indicators of progress specific to their role in supporting the strategic vision for the College.

Documentation of the use of assessment data for institutional-level planning and budgeting has been formalized through the new role of Assistant Provost of Academic Finance, who in partnership with the Provost and Executive Vice President, the Provost's Administrative Team, and the President's Cabinet, works to ensure that the planning and budgeting processes at the institutional level are transparent, data informed, and well-documented. Part of this continuous institutional improvement has been the development of a financial plan to ensure the College's fiscal health in the future through identifying cost-saving opportunities, development of novel and sustainable revenue streams, and strategic investments in human and institutional resources to support the sustainability of the institution throughout the period covered by the *Vision 2020* and *Vision 2020 Update* strategic planning documents. The development of a role within the Provost's Office that provides leadership for academic planning and budgeting has clarified and improved documentation of how institutional resource allocation is clearly connected to assessment data, as demonstrated through the College's "Close the Gap" plan for investment and growth in key areas to support institutional strategic objectives.

Academic program assessment at ESF is an organized, comprehensive, sustained process that involves a six-year cycle of external program reviews, including professional program accreditation for Engineering programs (ABET), Forest and Natural Resources Management programs (SAF), and the Landscape Architecture program (ASLA). For those programs at the College that are not externally accredited by a discipline specific organization, the program arranges for two to three peer reviewers from peer programs selected by the Provost. These reviews are used to inform programmatic changes, sometimes involving substantial changes. For example, the Construction Management program underwent a substantial modification to the student learning outcomes and curriculum following their review in 2012.

ESF engaged in a strategic planning process that included a collaborative team representing a variety of campus stakeholders including representatives from the faculty, staff, and institutional leadership. The Vision 2020 Update was completed and endorsed in the Spring 2016 semester through campus-wide review and revision of the committee drafts of this document and a special Academic Governance vote to endorse the document in May 2016. The function of this "bridging" document is to carry the institution to the next full strategic planning effort, expected to begin in 2017-2018 and includes features such as community-based planning work, SUNY initiatives, and a connection between these new developments and the original Vision 2020 document endorsed by the ESF Board of Trustees in 2003. This updated visioning document incorporates classic elements of a strategic plan, a discussion of "who we are" supported by institutionally representative accomplishments in the effort to meet Vision 2020 goals, an evolving statement of "who we are" as a college in terms of what we collectively aim to achieve, and a platform for continued discussion about ESF's future and a context for conversations and considerations to be addressed in the coming years. The Vision 2020 Update was presented to and endorsed by the ESF Board of Trustees in May 2016, followed by the dissolution of the committee upon the completion of the work charged by the President.

It is clear that ESF has continued to refine and improve the institutional assessment process since the most recent decennial evaluation during the 2011-2012 academic year. With support from the Commission, our liaison, and the dedication of all stakeholders at the institution we have been successful in developing a comprehensive, organized, and sustained process for the assessment of institutional effectiveness. The Commission's acceptance of the March 2015 Monitoring Report is evidence that we successfully conveyed that our assessment information is being used in budgeting and planning in an effort to improve programs and services. This has been followed up by an institutional commitment to transparency and effectiveness of resource allocation through the appointment of an Assistant Provost for Academic Finance who works collaboratively across the institution to ensure that assessment results were documented and shared with stakeholders through the campus-wide drafting of the *Vision 2020 Update*, which included the assessment of where we are as an institution in relation to the originally accepted goals in 2003, and has since been endorsed by the campus through the Academic Governance process as well as by the ESF Board of Trustees.

#### **Standard 12: Assessment of General Education Outcomes**

The effective assessment of General Education Outcomes has developed in strength regarding procedure, faculty involvement, and robustness of data since the decennial evaluation in 2012, and this improvement has been rapid since the 2015 Monitoring Visit from the Commission's evaluation team. At ESF, we discuss General Education as College-wide Student Learning Outcomes in an effort to acknowledge assumptions associated with the concept of "General Education," and to more effectively frame these outcomes in terms of an ESF experience rather than a series of introductory courses. The Assistant Director of Assessment and Institutional Research worked with the College-wide Student Learning Outcomes and to provide tools to shape the comprehensive nature of student learning outcomes assessment. An important development since our decennial evaluation has been improvement to the organization of the request for data, including the establishment and articulation of a timeline for CwSLO assessment activities throughout each academic year, as well as a schedule for when data on each SLO will be collected, assessed, synthesized and acted upon. These tables were included in the October 2016 Progress Report (Appendix C).

In addition to establishing a detailed timeline for data collection and schedule for assessing each SLO within two years, the CwSLOAC is charged with overseeing that the assessment plan developed in 2014 is sustained going forward. A key to the sustainability of this effort is continuous improvement of coordination between assessment staff, faculty assessment coordinators, and academic department faculty to ensure that data are collected, assessed, recommendations are made, and those recommendations are effectively communicated back to the faculty. One mechanism the CwSLOAC employed for accomplishing this was to survey all academic departments as an opportunity for faculty to engage with the CwSLOS in a meaningful

way, reflect upon opportunities to refine the delivery and assessment of these learning outcomes, and invite conversation about assessment strategies and resulting actions that will lead to improvement of CwSLO assessment at ESF.

The Committee has acknowledged persistent concerns about representativeness of data and identified a variety of data sources in order to generate a more robust dataset for future analysis of the College-wide Student Learning Outcomes. The Committee plans to create a five-year assessment plan to further organize assessment efforts, and to effectively communicate the role and importance of the College-wide student learning outcomes to the campus. Furthermore, by identifying the courses where these competencies are introduced and emphasized through a course to outcome matrix, academic departments will have a clearer understanding of their role in providing direct instruction in one or more of the institutional learning outcome areas. This matrix is included as part of the October 2016 Progress Report (Appendix C). Additional actions include:

- Work through all six of the outcomes to look for redundancy, and understanding and refining where we are getting the data
- Collaboratively designing how to map and keep the levels (introductory to mastery) organized
- Curriculum mapping of SLOs with courses using both catalog descriptions and syllabus mapping to make data collection easier
- Hosting a college-wide workshop on CwSLOs to make this an institutional priority, thus creating institutional memory around SLO assessment and data collection
- Creating a better understanding across campus about what it means to graduate from ESF and defining the basic set of competencies every ESF student should graduate with
- Utilizing the program-specific assessment that is already being performed to be more efficient in CwSLO assessment

As the CwSLO Committee has engaged in these actions, they have been able to further refine the procedures to ensure a sustained and comprehensive assessment of College-wide competencies, which will inform the continuous improvement of delivery of the identified institutional learning outcomes, and thereby the student achievement of these competencies.

### Standard 14: Assessment of Student Learning

ESF has sustained an established schedule for assessment, and academic programs have continued to improve their assessment methods within the framework of institutional policies and procedures. Some academic programs are accredited by outside agencies (ABET, SAF, and ASLA) and have established assessment cycles that have been in place in accordance with the discipline specific accrediting bodies and are therefore well organized and sustained. Those programs without discipline-specific accreditation, however, are also fully engaged with the
work of assessment and have been using the results and actions from prior review years to inform teaching and learning for the subsequent assessment cycles.

As assessment of student learning at ESF evolves, we are moving beyond procedural documentation toward a consistent use of a variety of assessment metrics that can be acted upon directly for the improvement of teaching and learning. As programs have continued to use the process of documenting and analyzing assessment data to identify appropriate data sources, many have been able to make important improvements to support student achievement of identified learning outcomes. At a broader level, the Bioprocess Engineering department reviews their assessment plan on an annual basis, in response to student achievement of program learning outcomes, in order to assess their targets more effectively. The Assessment Planning Report, available through TracDat, allows programs to examine and refine their assessment plans, and to track changes to their assessment methods.

These examples, as well as others included in the October 1, 2016 Progress Report (Appendix C), demonstrate that assessment information is used to improve teaching and learning, and that the academic programs at ESF show evidence of a comprehensive, organized, and sustained process for the assessment of student learning. Direct evidence, methods, and measures for evaluating student learning are outlined in Appendix C.

#### Section 6: Linked Institutional Planning and Budgeting Process

#### **Closing the Gap Overview**

Since 2014 when President Wheeler's tenure began at ESF, the process for linking institutional planning and budgeting has been greatly increased. This is, in part, because of the impact of declining state support for public higher education in New York State. To contextualize the development of this linked institutional planning and budgeting process, it is important to acknowledge the reduction in support of higher education at the state and federal level. In brief, the nominal reduction in state support from 2008 to 2016 is \$5.3 million. However, considering the reduction in purchasing power due to inflation, when compared to \$27,938 in 2008, the 2016-17 figure is conservatively estimated to be \$20,300, or a \$7.6 million reduction (see Figure 1).



Figure 1: 2005 – 2016 Annual State Support Showing Significant Decline from 2007 - 1011

The development and implementation of a visible, enterprise-wide financial planning effort, initially dubbed as "Close the Gap" planning, has now been incorporated into our base institutional financial planning and management system. Through regular annual processes including the annual administrative unit assessment planning and reporting, needs beyond current operational efforts are specifically identified and entered into the on-going institutional financial planning efforts. In addition, academic and administrative units are asked several times a year to identify specific needs, e.g. Academic Departments are asked mid-year to identify

upcoming faculty needs. All departments are also asked annually to submit physical plant and facilities needs that are beyond the current operating budget. A Capital Planning Committee representing all constituents on campus has been formed to review these needs on a regular basis to provide advice on priority-setting to address them. The finance group advises Executive Cabinet who collaboratively determine resource allocations which are then approved by the President.

Following peak state funding in 2008, public institutions in New York State experienced several years of decline in state support. At ESF, we do not anticipate support to return to the previous level thus the campus has established a plan to adjust to this new norm. Initially, the budget gap was addressed by deferring critical maintenance and capital projects and limiting new hires at the College. However, going forward we are pursuing a growth-oriented framework that does not identify reductions in workforce, administrative units, or academic departments. Furthermore, this plan extends beyond the elimination of the structural budget deficit to continue building necessary resources across the institution.

#### **Eliminating the Structural Budget Deficit**

ESF has adopted an all enterprise view of planning and budgeting in order to fully understand primary revenue sources, including state, research foundation, and college foundation funding streams, as well as new and expanded revenue sources and upcoming expenditures that were not previously included in the budget; for example, these may be program and research obligations or state mandates. Additionally, this all enterprise view allows us to consider infrastructure needs, such as maintenance and capital needs for improvements to classrooms and labs, as well as addressing campus accessibility issues. Importantly, this expanded lens for institutional budgeting and planning allows us to clearly connect institutional priorities and mission with necessary expenditures to ensure that the College makes financial decisions that align with institutional priorities in a transparent manner, while estimating marginal expenditures and expanding marginal revenue in a way that maintains institutional stability and quality.

For institutional planning and budgeting to be linked, sustainable, and effective, it was essential for ESF to develop – and share transparently with campus stakeholders – a clear picture of institutional revenue sources prior to determining how we would manage the structural budget deficit, short and long term expenses, and to reasonably identify areas where we could develop or expand revenue sources in order to support institutional objectives. Figure 2 provides an overview of revenue streams ESF identified early in the process of developing the Close the Gap plan.





In order to effectively manage expenses, it was essential to determine expenses beyond those already in the operating budget in order to proactively align institutional planning with resource allocation. In developing this plan to eliminate the structural budget deficit, we identified several areas that were not included in short term budgeting, but would have to be addressed in the long term financial plan for the College. Part of this process included planning for growth-related expenses, such as adding faculty lines beyond backfill positions, estimating salary increases for faculty and staff, and adding staff and administrative support for the College in the areas of Information Technology, Maintenance, Diversity, Teaching and Lab Support, and Enrollment Management. These expenses were projected through the 2020-21 academic year in order to ensure that growth could be sustainable. Additionally, ESF identified four primary areas where we can create or expand marginal institutional revenue. These include increasing our out of state enrollment, supporting greater development efforts, improving energy efficiency on campus, and pursuing online enrollment in new and enduring markets related to sustainability and environmental education.

#### From Closing the Gap to Growing the Institution

Sustaining a strong connection between institutional planning and budgeting decisions is an integral part of the Close the Gap plan, in part because of the intent to add staff and administrative support in several critical areas for the College. Involved in this five year planning cycle are administrative unit annual work plans and assessment, with a particular focus on supporting strategic and financial plans at the unit and institutional level. Academic planning and assessment are also critical, in order to invest resources in the most critical areas in order to support ESF's institutional mission to advance knowledge and skills for leadership and stewardship of our natural resources. Finally, this five year financial planning cycle is designed to be an annual undertaking, in order for the institution to remain responsive to annual adjustments to institutional priorities, while remaining forward facing to ensure that ESF has considered the long term impact of financial decisions on institutional planning.

# **VISION 2020 UPDATE**

# Bridging From 2016 to 2020 and Beyond

# President's Statement

ESF has a remarkable history of responding to emerging environmental challenges while maintaining at its core a focus on environmental science, engineering, design and management; excellence in teaching; and impact through discovery and problem-solving. With this document – bridging the prevailing Vision 2020 strategic plan with the College's next planning steps – we begin the exciting journey of reimagining our future!

At its founding, ESF responded to an urgent need to restore New York State's forest resources and adopt sustainable forest management practices. New York's investment in "its" forestry school was a spectacular success, the results of which can be seen today in forest cover across the state and in diverse leading-edge research and degree programs. As other needs and opportunities arose, ESF adapted to meet them, creating programs in chemistry, environmental engineering, paper and bioprocess engineering, environmental and forest biology, forest and natural resources management, landscape design and preservation, energy research and management, environmental communications and policy, planning, sustainability, and the relationship between environment and human health, to name only a few.

Global environmental changes are spawning new challenges and magnifying old ones. The 21st century will be marked by environmental challenges unprecedented in number, scale and complexity. Some, such as the loss of biodiversity and depletion of resources, will have irreversible consequences for humanity and nature. From deeper understanding of the biotic and abiotic dynamics of the planet's biosphere to sustainable alternatives to meet human demands for energy, food, materials, industrial processes and urban designs, the great needs of society have aligned with the strengths of ESF.

To make its greatest contributions, ESF is once again called upon to adapt. The College, already a model of collaboration, will extend its reach by establishing even more partnerships in and beyond academia. It will be a leader in broadening participation in science, technology, engineering and math (STEM) fields by making its campus and programs as welcoming as possible to all who share its desire to create a better future. It will build upon its tradition of working across disciplines to become a model for confronting grand environmental challenges by leading scientific and engineering innovation, while engaging ethical, societal and human dimensions.

ESF also recognizes that the lands it resides on are the traditional territory of the Haudenosaunee peoples. That growing realization and internalization gives us pause and transforms us in ways still not yet fully explored or explained. Thus, we also commit to something different—something a list of quantifiable targets cannot always fully express.

- We commit to be responsible caretakers, and responsible neighbors, and to be co-inhabitants of these lands and those far beyond, and across, our planet Earth.
- We commit to remember and learn from those who came before us—to learn from other species with whom we share (and to whom we owe) our existence.
- We commit to take pause and listen, to think about what world we would like to leave for those who come after us—to seek consent, to act bravely and to tread more lightly.

We hope our commitment inspires our own community and others to take the long-term view and act as if we were all indigenous to this planet, our home—as if we intended to stay, and co-exist here, together.

We will **sustain**, **seize** and **seed** to create ESF's next century of success: **sustaining** existing strengths, **seizing** opportunities as they arise and sowing the **seeds** of future opportunities. We will emphasize those things that make ESF uniquely excellent, and increase the College's national visibility to attract new partners and investors who share our passion for creating a better tomorrow, once again adapting to expand ESF's relevance and impact.

> Quentin Wheeler President

# From the ESF Strategic Planning Steering Committee

ESF is an energetic, vibrant and dynamic institution – consider that at one time we were only a forestry College. Today we are much, much more. We are a leading environmental college, poised to provide environmental solutions and effect changes through teaching and research as rapidly as today's world requires. Finances, societal interests and needs, and environmental issues drive our need to consider ESF's role and responsibilities in our second century.

The College's first strategic plan, in 2003, benchmarked who we were (are) and who we wanted to be. This thinking was encapsulated in *Vision 2020*. In the fall of 2015, it was determined that *Vision 2020* needed to be updated to provide a bridge from the present to 2020, when a new strategic plan will take its place.

Primary ideas for this *Vision 2020 Update* were gathered from an array of sources, including an accounting of accomplishments with reference to *Vision 2020* goals. Additionally, a variety of innovative strategic planning events and processes were undertaken in 2014-2015 that produced new, aspirational aspects of ESF's vision, mission, values, goals, academic direction and connections to recent SUNY initiatives. These, too, were used in the *Update*.

Herein are the results: a renewed portrayal of ESF – who we are today, who we aspire to be in the near future and what we want to achieve in between.

Our Vision 2020 Update is:

- a visioning document with some classic elements of a strategic plan, including College-level statements on: vision and mission; goals, subgoals, objectives and targets; and monitoring/evaluation
- a portrayal of "who we are," supported by descriptions of recent representative accomplishments by the College community aimed at meeting *Vision 2020* goals
- an evolving statement of "who we want to be," designed around an expanded treatise on academic direction for the whole College, and an emphasis on what we aim to "achieve" – statements on "what to do" are intentionally left to units, departments, partners and other stakeholders as they continue to work toward our collective vision
- a "bridging" document meant to carry the institution to the next full effort in strategic planning set to begin in 2017-2018; this Vision 2020 Update "bridge" features new aspects of communitybased planning work from the past few years and new SUNY efforts in planning and connects them to the original 2003 version of Vision 2020
- an impetus and platform for continued discussion about ESF's future; the Vision 2020 Update is not about resolving all that ESF is and can be it is a recognition of the breadth of work at ESF,

both ongoing and possible, and a framework for conversations and considerations in which we need to engage over the next few years.

This update is meant to stimulate thoughts, reflection and discussion as a means to engage the ESF community and its stakeholders in preparation for a new strategic plan that will replace this *Vision 2020 Update* in 2020. We expect that much discussion – and wrestling of ideas about what ESF is – will occur over the next few years as a result of this *Update*. Excellent. Have at it, engage and get prepared for ESF's future.

Respectfully,

The ESF Strategic Planning Steering Committee

May 2016

## Vision and Mission

### **ESF VISION**

### A better world through environmental discovery

Our vision is a world filled with natural and designed environments that are diverse, resilient and responsive in the challenging context of environmental change. ESF will create new opportunities for sustaining both human prosperity and the enduring integrity of the natural world as we work to achieve this vision.

### **ESF MISSION**

### To advance knowledge and skills and to promote the leadership necessary for the stewardship of both the natural and designed environments

ESF's mission includes outstanding teaching, research, scholarship and outreach programs focused on building sustainable communities and environments. ESF develops creative and effective solutions to environmental challenges and natural resource utilization through discovery, design, management, practice and the integration of social, economic, technological and environmental systems. We educate and inspire environmental leaders and provide a model for a new environmentalism that is science based, values informed and inclusive.

# ESF Values

The College of Environmental Science and Forestry embraces the public trust placed in it by the people of New York state and accepts the responsibility to advance knowledge in our specialized areas of study. We will fulfill this duty consistent with our core values of discovery, community and service.

As an academic institution, ESF is committed to the process of discovery, the dissemination of knowledge and the discipline required of scholarship. Embedded in these values are innovation and a dedication to continuous learning. Informed by science and guided by effective design and planning, the faculty, staff and students at ESF are committed to sustainable practices and policy alternatives that will both protect the environment and meet the needs of a global society.

As a community, ESF is committed to the highest standards of personal and professional behavior. We celebrate the diverse backgrounds, cultures and perspectives represented in our community. We believe that respect for one's self and others leads to a community characterized by integrity and honor. We are attentive to the health, safety and well-being of our community, realizing our greatest assets are our faculty, staff and students. Through this concern and compassion for others, we continually improve and truly make a difference.

As part of the State University of New York, our service to the community extends beyond our campus. We are committed to sharing our discoveries and knowledge with public and private constituencies, organizations and citizens throughout our state, our nation and, indeed, our world.

We, the faculty, staff and students at ESF, see our foundation in the values of discovery, community and service. These values inspire us to do our best as we pursue our mission.

In explicitly enumerating a set of institutional values, ESF reminds itself and informs the world of those things that guide the College's planning and the practices it embraces as fundamental to what ESF is. The College phrases these organizational values as commitments that can be understood to describe the essence of ESF.

Academically Free: ESF values the academic freedom of inquiry as essential to the mission of ESF

Agile: ESF is able and willing to adapt to unexpected needs and opportunities

**Collaborative**: ESF is eager to work across disciplines, with other organizations, and with New York state communities to amplify what it can accomplish

**Curious**: ESF is driven by curiosity to explore and understand the natural world for pure knowledge, understanding and joy

**Diverse and Inclusive**: ESF believes that all people have much to contribute and that all perspectives deserve respect

**Entrepreneurial**: ESF is ever vigilant in a search for ways in which to make the most of every resource, idea and opportunity

**Impactful**: ESF makes the greatest positive contribution and impact possible whether on the environment, the individual, society or ideas

Integrity: ESF's actions are guided by strong principles and adherence to moral and ethical codes

# **Commitment to Sustainability**

Sustainability is central to ESF's mission. This, as well as an evolving understanding of its many dimensions, causes the College to continuously undertake a full-scale evaluation of its sustainability commitment.

In 2011, ESF framed its re-accreditation assessment around sustainability. The College proclaimed that "Sustainability begins with an obligation to meet present needs without compromising the ability of future generations to meet their needs through:

- the understanding of basic functions of natural and social systems;
- acknowledging and quantifying the limitations of nature's capacity; and
- developing solutions through the integration of social, economic, technological, and environmental systems."

This refers to the long-term viability of a system with regard to economic, social and environmental goals and constraints.

One of ESF's important efforts remains quantifying its commitments and actions over time, and benchmarking against other colleges and universities to stay informed and to lead with best practices. ESF commits to an annual cycle of assessment, planning, and implementation, guided by the industry-standard for measuring campus sustainability: STARS—Sustainability Tracking and Rating System. By 2020, ESF will move from its present Gold STARS rating to Platinum status – the highest level – and, as a component of this, achieve carbon neutrality.

ESF also recognizes that sustainability uniquely involves linking academic and physical operations of the institution for the purpose of mutually beneficial interactions. The campus as a "living laboratory" is an example of this; as such, the College will improve teaching and research by opening up operations and processes. Ultimately, this will result in the intellectual might of the College community continuously improving the physical and social operations of the College, including reducing costs.

# Academic Directions

Meeting environmental challenges frames the context of ESF's educational mission. The College educates the next generation of environmental thinkers, decision makers and problem solvers. Today's environmental issues are inherently complex and must consider a variety of perspectives and competing interests. In *Vision 2020*, four themes — Applied Ecology and Conservation Biology; Renewable Materials, Energy and Biotechnology; Sustainable Systems and Communities; and Environmental and Natural Resources Information Systems — provided a context to integrate and synthesize the cultural, natural and industrial perspectives embracing all of ESF's teaching, research and service programs. This context still applies today but has grown in depth and complexity. ESF has responded, building new education and research programs, and supporting and being supported by staff and faculty in that work. Recently, ESF's areas of expertise have been regrouped as eight integrative agenda items, or focal areas – these defined focal areas are intended to highlight and foster work by transdisciplinary teams that will generate discoveries related to, and addressing solutions for, the environmental challenges facing ESF, society and the biosphere.

Clear bridging connections exist between the Vision 2020 "Academic Directions" and the new integrative agenda items which encompass the variety of disciplines and perspectives of faculty and staff at ESF. While ESF is more than the sums of these parts, it is this collective of directions, questions and items that capture much of what ESF is and aspires to be. Within this framework, ESF's academic and support programs bring a multidisciplinary and collaborative approach that builds on past strengths and forges new ones. ESF's dynamic array of programs, with a foundation of academic excellence, offers solutions to the world's environmental problems.

#### THE "COMPASS POINTS" – THEMATIC LEGACY OF VISION 2020

#### **Applied Ecology and Conservation Biology**

The field of Applied Ecology and Conservation Biology explores how to maintain healthy, functional ecosystems and conserve the earth's rich biological diversity. Its purpose is to identify long-term measures to prevent degradation of ecosystem function and loss of biological diversity while accommodating the ever-increasing needs of human society. Conservation biology applies scientific knowledge toward maintaining and restoring the earth's biological diversity. Conserving diversity at all levels of an ecosystem is both paramount and increasingly difficult. Conservation biology integrates biological perspectives with social, economic and political ones to maintain this delicate balance.

#### **Renewable Materials, Energy and Biotechnology**

The wise use of renewable materials is key to both economic and environmental well-being. Developing strategies to reduce reliance on fossil fuels as an energy source is a vital challenge for the 21st century. Engineering of novel processes and materials using renewable resources and biotechnology is a key part of ESF's strategy to contribute to meeting this challenge. It is essential to achieving environmental improvement because it creates new ways to use natural processes for human benefit and can be directed toward the cleansing of contaminated habitats.

#### **Sustainable Systems and Communities**

The concept of sustainable development was defined by the World Commission on Environment and Development as a form of progress "that meets the needs of the present without compromising the ability of future generations to meet their own needs." At ESF, successful design and implementation of sustainable systems and communities integrate concerns for the natural environment with concerns for quality of human life and communities. Through research and education, College faculty and students explore the interactions of biological and human systems for the maintenance and long-term improvement of both.

#### **Environmental and Natural Resources Information Systems**

Scientific discovery begins with curiosity and a question that needs to be answered. From there, one collects objective data and then uses or analyzes that information. Finally, the outcome or result of that methodological sequence is communicated. Through data acquisition, analysis, modeling and simulation, and interpretation, ESF brings environmental and natural resources information systems to the classroom as well as to research and public service efforts. Examples include wildlife monitoring, ecosystems and watershed modeling, GIS and remote sensing analysis, urban lead and acid rain studies, and the Northern Forests Initiative.

#### **ENVIRONMENTAL CHALLENGES: AN INTEGRATIVE APPROACH**

ESF will continue to pursue many areas of research, scholarship, management, science, design, and engineering. It is planned that the following focal areas of multi- and trans-disciplinary work define those areas for which integration of expertise across multiple disciplines will be called upon and met at ESF. These focal areas are a basis for creating an ESF integrative agenda that defines and foreshadows trans-disciplinary academic teams:

• Earth, Air, Water and Life

Core strengths in STEM fields underpin each department and academic program at ESF. From the fundamental physical and chemical properties of each of the earth's terrestrial, marine and atmospheric systems to the unique ways in which life has adapted to the biosphere, ESF's programs bridge disciplines to consider the interconnections between and overarching each.

- Biodiversity, Natural History and Biomimicry ESF's long-standing natural history tradition is the foundation for nature-inspired innovations in sustainable design, materials, processes, policies, and ideas developed by the College's research and educational activities. Our strength in sustainability problem solving makes the College uniquely capable of a leadership role in this emerging area.
- Environmental Communications, Values, Equity and Justice
   Understanding the many ways that communication, broadly defined, intersects environmental
   affairs is at the core of ESF's values and mission. It is through all methods of communication that
   humans determine their relationship with the rest of the planet and with each other. Various
   academic programs and institutional initiatives address the communicative dynamics of
   behaviors, attitudes, values, perceptions and ideologies and the ability of participants to
   communicate and use information effectively, strategically and ethically.
- Environmental and Natural Resource Planning and Management From its founding, ESF has been committed to preparing graduates as teachers, researchers, planners, managers and policy makers. These dedicated alumni have contributed, and will

continue to do so throughout their careers, to viable and sustainable management of the earth's natural resources. Examples of their work can be found regionally, nationally, and worldwide, including integrating natural and cultural communities, leading the transition from fossil-based to renewable energy systems and addressing the unique environmental, legal, social and cultural components of the resource systems to be managed.

- Natural Products and Sustainable Energy and Materials
   ESF will pursue a leadership role in the development of natural products, materials and fuels,
   highlighting the utility of wood and cellulose-based feedstocks, bioactive chemicals or other
   useful biologically derived chemicals and materials and pursuing inquiry into their underlying
   materials science and potential industrial application. ESF's long history of research in polymer
   chemistry, chemical ecology, paper science, wood science and bioprocess engineering places us
   in a unique position to capitalize on these emerging disciplinary areas.
- Social, Economic and Ecological Systems

Understanding our world as a set of interconnected and interdependent systems is essential to identifying and addressing the complex environmental problems facing humankind today and in the future. ESF's expertise in environmentally focused social sciences highlights the nexus of sociocultural, political and economic systems with local, regional and global ecologies and ecosystems.

• Environment, Human Health and Quality of Life

The role of the environment in influencing and contributing to human health and quality of life is one of growing importance and concern. ESF's programs in the science of the environment, including the physical and chemical properties of ground and surface water, soils, biotic systems of all kinds, visual and acoustic environments, and air and atmospheric systems all contribute to an emerging and growing focus on the intersection of human health and environmental quality. Environmental justice is an aspect of inquiry and learning that brings social and political science to bear.

• Ecological Design and Engineering

The sustainable design and engineering of the built environment, including construction and urban design as well as the restoration of natural environments, relies on a deep understanding of ecology and ecological systems and principles. Through the incorporation of these principles, as well as an understanding of associated social, cultural and political systems, ESF's programs focus on the design and engineering of environments where humans are intrinsically seen as integral parts of local and regional ecologies.



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# Vision 2020 – Goals Assessment

*Vision 2020* had at its core a commitment for ESF to achieve seven goals as defined by an accompanying set of 75 targets (targets are tantamount to subgoals or objectives that are strategic definitions and directions of how a goal was to be achieved). Each of the seven original *Vision 2020* goals are presented verbatim as in 2003 in the following pages with their original written descriptions ("quoted," italicized text after each goal, most of it directly from the 2003 *Vision 2020* document). As part of this *Update*, each of the 75 targets was assessed for level of accomplishment using a two-category system: 1) meeting/ approaching; or 2) renewed/ongoing, primarily based on published ESF reports from the past 5 years (e.g., Middle States Accreditation, SUNY Excels) and new, *Update*-related unit and department reports. Additionally, a third category was assigned to any new targets added to a goal: new, as developed in process of updating *Vision 2020*.

Connections between *Vision 2020* goals and targets and the new SUNY Excels state-level strategic planning were made by linking (parenthetically) select targets with one or more of the SUNY Excels goals (A for Access, C for Completion, S for Success, I for Inquiry and E for Engagement). These connections are from the 2015-2016 ESF SUNY Excels plan, and are important because of heightened attention from SUNY on these targets for performance and monitoring.

A set of recent (last 5 years), institutional accomplishments and initiatives are presented with each goal to highlight ESF's work inside and outside the institution that will carry on until 2020, and likely beyond. These statements are intended to define in part "who we are at ESF," and "who we will be" over the short term.

# GOAL 1: Enrich academic excellence in both undergraduate and graduate education

"Meeting environmental challenges frames the context of ESF's educational mission. The college educates and trains undergraduate and graduate students as the next generation of environmental thinkers, decision makers and problem solvers.

Today's environmental issues are inherently complex and must consider a variety of perspectives and competing interests. In 2020, four themes — Applied Ecology and Conservation Biology; Renewable Materials, Energy and Biotechnology; Sustainable Systems and Communities; and Environmental and Natural Resources Information Systems — provide a context to integrate and synthesize the cultural, natural and industrial perspectives embracing all of ESF's academic, research and service programs. Within this framework, and with new perspectives on integrative areas and transdisciplinary work, ESF's academic programs bring a multidisciplinary and collaborative approach that builds on past strengths and forges new ones. ESF's dynamic array of programs, with a foundation of academic excellence, offers solutions to the world's environmental problems – now, in 2020, and beyond."

#### Assessment of Vision 2020 targets

#### Meeting/Approaching:

- Five programs to be ranked in the top five of their kind nationally
- Add new academic programs (A)
- Add summer bridge programs to assist entering freshmen in meeting math and science requirements (A, C)
- Implement outcomes-based learning (S)
- Increase collaborative, multidisciplinary and multi-institutional programs (E)
- Achieve additional academic program certification, accreditation or validation
- Strategically recruit and hire at least eight new exceptional faculty members (A)
- Strengthen the caliber of our freshmen class so that 90 percent are admitted under "most selective" or "highly selective" criteria (A)
- Strengthen support services to enhance academic excellence (A, C, S)

#### Renewed/Ongoing:

- Achieve distinction in the areas of distance learning, information technology, and classroom technology and media
- Achieve a diverse student body such that 15 percent of graduating students are from underrepresented populations (A)

#### New:

• Develop an intentionally designed general education experience

• Develop novel coursework where diversity is explored and emphasized in different contexts, while engaging in thoughtful and respectful discussions surrounding diversity within all coursework

- Develop programs specifically designed to increase diversity of students pursuing education and careers in STEM-related fields
- Ensure that graduate students are provided both focused learning and flexibility in tailored learning to complete their degrees
- Expand student, staff and faculty knowledge of techniques and processes associated with existing and new technologies, including digital communications and literacy

#### **Recent Accomplishments/Initiatives**

New academic programs have been/are being developed, e.g., Biochemistry, Bioprocess Engineering, Environmental Health, Renewable Materials Science, and Sustainable Energy Management programs, that respond to and meet societal needs and student interests.

A variety of academic options have been expanded and created, including the development of two dozen minors, with each department housing two or more minors. Additionally, the Honors Program has grown significantly, with 25-35 students graduating each year.

An independent "virtual library" was established on campus with resources that include online catalog, databases and associated support system.

Modern scholarly communication was improved by launching an institutional repository. *Digital Commons @ ESF* is a secure location to showcase the scholarly output of the ESF academic community. From student work to faculty publications to media and archival material, ESF has steadily built content that is available and findable.

ESF created and formalized the SEEDS academic support program that provides needed coaching and mentoring to academically at-risk students to support their academic pursuits. (Approximately 314 students have participated in the SEEDS program over the past 5 years).

CSTEP (Collegiate Science and Technology Entry Program) has been at ESF for 11 years, and the grant was recently renewed through 2020. This New York State Department of Education program works to increase the number of historically underrepresented, economically disadvantaged college students who complete pre-professional or professional undergraduate or graduate programs in these fields. The major aspects of this enrichment program are academic support, faculty mentoring, skill building, professional development and community service.

The Writing Resource Center has grown from serving a handful of students just a few years ago to serving hundreds each year. There were 788 appointments made in the academic year 2014-2015, up from 357 appointments the previous year.

ESF has added six new revenue-generating Master of Professional Studies graduate programs over the past 5 years, one modeled on the "Professional Science Masters" typology developed by the Council of Graduate Schools, and the remainder conforming to the Peace Corps Masters International program guidelines.

### **GOAL 2: Provide an outstanding student experience**

"Students in the year 2020 will be more numerous and more diverse. They will arrive at college with widely varied racial and ethnic backgrounds, family situations, values and goals, and personal and professional destinations. They may study on campus or at a remote location. Academic programs will need to accommodate this diversity. For offices providing enrichment and support services, adapting to these new clients and their expectations will be critical.

Excellence in academic programs provided by top quality faculty is complemented at ESF by excellence in support services and enrichment programs outside the classroom. Stimulating and responsive campus programs advance personal, social and professional development."

#### Assessment of Vision 2020 Targets

#### Meeting/Approaching:

- Provide a safe and supportive learning environment (C)
- Strengthen faculty/student interaction (C)
- Add summer eco-camps to expose underprivileged children in the Syracuse area to science/environmental education (A)
- Further develop programs designed to assist students at risk (C)
- Increase experiential learning opportunities (S)
- Provide adequate scholarship dollars to ensure successful academic performance (A, C)

#### Renewed/Ongoing:

- Define and facilitate a set of skills and knowledge all ESF students will have upon graduation, such as personal responsibility, citizenship, appreciation of diversity, leadership and information technology (S)
- Achieve the highest graduation rates in SUNY (80 percent)
- Balance the need for and use of technology with the importance and benefits of personal interaction
- Fully develop regional and international learning experiences (S)

#### New:

- Create new opportunities to explore and experience diversity, to make ESF an inclusive and supportive environment for all members of the community
- Determine the appropriate level of financial support to achieve the College's recruitment and retention goals
- Develop further general leadership trainings for more students by expanding upon the current *Emerging Leaders* program, student organization trainings, Orientation Leader program and other leadership programs on campus
- Create a plan for community service programming and the reporting of engagement experiences at ESF

- Continue to develop further key goals and signature programs for all first-year and transfer students at ESF so there is a noteworthy, impactful and smooth transition for new ESF students
- Ensure that graduate students are provided satisfactory expectations and responsibilities, funding opportunities and suitable working spaces necessary to complete their degrees
- Create opportunities for international and national travel programs similar to the requirement used by the successful off-campus program in Landscape Architecture
- Create programs (e.g., ESF Graduate Student Young Professionals Program) to enhance the graduate student experience
- Expand interdisciplinary research opportunities for undergraduate and graduate students

#### **Recent Accomplishments/Initiatives**

In 2011, the College opened Centennial Hall as the first dedicated residence hall for ESF students. It is an environmentally friendly "green" building that was awarded Gold certification by the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) program. An addition to the building was constructed in 2014 to accommodate high student demand. The building currently houses approximately 550 ESF first-year and upper-class students.

International and domestic opportunities are in place or under development across departments to allow students to study outside the classroom (Wild Rockies, Study Abroad, FEMA Corps).

All departments offer several experiential learning opportunities, including through coursework, workshops and seminars. College ("forest") properties – particularly the Dubuar Forest at The Ranger School/Wanakena Campus, Cranberry Lake Biological Station, Huntington Wildlife Forest at the Newcomb Campus, and Heiberg Forest – provide a world-class platform for ESF students to pursue hands-on field research and learning and expand opportunities for networking with other academic and research institutions. These educational experiences lead to new discoveries, knowledge and career pathways for students.

Cellular communications have been upgraded across the College properties, with plans to secure a telecommunications tower at The Ranger School.

Scholarship support provided by ESF College Foundation to students across all programs increased over 200 percent in the last 5 years, from a total of \$363,780 available in fiscal year 2010-2011 to a total of \$1,098,425 in fiscal year 2015-2016.

University Police are partnering with the Athletics Office to assign individual officers as mentors to individual teams, with particular connection to Title IX work. The intent with this mentoring initiative is to strengthen relationships between University Police and student populations and better monitor campus "climate."

More than 150 ESF students participate in intercollegiate athletics each year, representing approximately 9 percent of the full-time undergraduate enrollment. Goals for the Office of Athletics have been accomplished without having any ESF-operated athletic fields or facilities for student use (all facilities are rented). The program functions entirely with part-time coaches and administrators and provides 87 percent of its annual expenses through an athletics fee approved by an ESF student referendum, implemented in 2010-2011.

Intercollegiate athletics have helped ESF achieve its student recruitment goals. Athletic scholarships are not provided and criteria for College admission are the same for student-athletes, but athletics impacts

College choice decisions for many applicants. More than 450 of ESF's 1,600 applicants for freshman admissions for Fall 2015 (28 percent) participated in high school-level athletics.

Faculty advising and other support of student clubs across departments has increased faculty-student interactions. ESF has more than 30 recognized clubs.

ESF enrolled a record 1,733 undergraduate students in Fall 2015, with 62 percent awarded institutional scholarships and approximately 80 percent awarded financial aid.

Careful management of student loan awards and loan counseling have resulted in a 3-year student loan default rate for ESF graduates that is under 4 percent, while the average rate for SUNY campuses is over 7 percent (2011 data).

An online alcohol/other drug, sexual violence prevention and healthy relationship program, called *Think About It,* was successfully implemented with first-year and new transfer students. Average annual compliance with this program is 95.7 percent.

A new online literary journal, *Unearthed*, has been created. *Unearthed* solicits and publishes ESF undergraduate student videos, artwork, essays, poems and short stories.

The Rosen Undergraduate Fellowship and the Fink Career Fellowship have together, since 2013, supported over 50 students in their domestic/international experiences through their work via internships, courses, conferences and symposia.

### GOAL 3: Be the "go to" institution with a strong and visible reputation

"College reputations are built on a complex set of relationships. Programs offered, cost, and location combine with such intangible elements as history, tradition and public perception. With increased competition for students, collaborators and donors, an effective public presence is critical to ESF's success.

In the year 2020, ESF's name is immediately recognized and associated with quality and achievement. The college is established as the authority and source for environmental news among reporters. Business, government and agency leaders regularly seek to consult with ESF faculty and staff, and college scientists are sought-after research collaborators."

#### Assessment of Vision 2020 Targets

#### Meeting/Approaching:

- Create brand-name recognition and attraction
- Target high schools to communicate our excellence
- Establish strength in marketing and external relations
- Establish visible research initiatives
- Enhance College recognition programs, such as the Feinstone Environmental Awards, to garner additional publicity and respect

#### Renewed/Ongoing:

- Enhance our web-based presence
- Become the authority and source for environmental news
- Establish a multi-institutional national environmental academy (E)
- Pursue College programs and activities to include student outreach and teacher development in multiple off-site locations including international arenas (E)
- Be a major player for environmental consultation by business, government, grantmakers and the like (E)

• Make the Feinstone Award the most respected and well-known recognition program of its type

#### **Recent Accomplishments/Initiatives**

ESF College rankings have improved dramatically since 2010, with ESF ranked #30 among all public universities by U.S. News in 2014-15 (see Forbes, US News, Washington Monthly, etc.).

Total ESF enrollment has increased by 22 percent since 2005 (1,856 to 2,266 matriculated students).

Freshman SAT scores have increased by 44 points (1169 to 1213) since 2010, and out-of-state enrollment has grown from 17 to 24 percent of our entering class.

Communications Office placements in national and statewide media have increased from 372 in 2009-10 to 951 in 2014-15 (+156 percent).

The ESF website attracts approximately 1.2 million unique visitors per year (ESF data).

The College will contact more than 140,000 high school students through direct mail advertising in 2015-16, a 24 percent increase from 2010-11 levels (ESF data).

ESF's *Going Green* television segments reach an estimated 1.72 million viewers each week through a partnership established with Time Warner Cable. These segments provide 16 minutes of television exposure weekly across upstate New York, at no cost to ESF beyond production time.

ESF's "Top 10 New Species" list has resulted in hundreds of media placements and more than 800,000 unique visitors to the ESF website over the past 2 years.

Faculty research initiatives have been promoted in the media to increase College visibility. Prominent examples include Galapagos tortoises, American chestnut, and biomass energy research.

A marketing communications study is being completed that aims to further define ESF's market position to better inspire prospective students, donors, foundations and other key audiences through improved messaging.

The Office of Communications will continue to explore unique opportunities to position the College as a "player" in state, national and international communications, interactions and partnerships in the areas of sustainability and the environment. We are exploring the potential to establish a new national poll covering current environmental issues. We will also work to publicize the activities of ESF's Center for a New American Environmentalism to further ESF's image as a "thought leader."

ESF's First Destination Survey (formerly the Graduating Student Survey) provides a snapshot of the landing point of recent graduates (defined as those having graduated within the previous 12-month period). In 2014, students reported the highest overall placement rate in history, 91.1 percent, and the highest employment in a position related to their ESF major, with 89.1 percent.

### **GOAL 4: Become financially secure and independent**

"A strong fund-raising program — incorporating alumni giving, support from private foundations, corporate donations — and a large endowment and asset source can mean the difference between excellence and mediocrity.

In 2020, ESF capitalizes on its strong position with alumni and corporate collaborators, and the public's perception of the importance of its mission. The college's large and growing endowment and asset bank, as well as sufficient operating funds, allow ESF to recruit and retain top-caliber students and faculty, enhance and develop academic programs, and protect itself against the vagaries of state funding."

#### Assessment of Vision 2020 Targets

#### Meeting/Approaching:

• Strengthen and diversify the endowment and research dollar sources

• Create \$100 million in ESF College Foundation assets ("asset" was originally, incorrectly
referred to as "endowment" in Vision 2020) (in 2020 dollars) to include increased alumni,
corporate, and foundation giving

- Establish faculty-specific scholarships and target unit-specific foundations and other previously untapped entities for support (E)
- Develop a web-based donation program to solicit and accept gifts in support of ESF programs
- Through the ESF College Foundation, acquire properties as investments and/or revenuegenerating opportunities

• Create a full-service development organization supported by the endowment of the Foundation (E)

#### Renewed/Ongoing:

- Achieve \$30 million in annual research monies through diversified funding sources
- Establish eight endowed faculty chairs (E)
- Improve the royalty stream from author-/principal investor-derived intellectual property (I)
- Launch an e-commerce initiative to promote intellectual capital

#### New:

• Complete a "close-the-gap" plan focusing on short-term actions, reallocations, and investments to increase revenue generation over 1 to 3 years while aligning with the long-term goal to eliminate the College's structural budget deficit

• Increase student enrollment with an emphasis on out-of-state undergraduate students, online students and self-funded graduate students

• Increase the number of development staff and work toward creating a more robust institutional advancement structure to provide private funding support to the College

• Design and launch a new fundraising campaign to support new and existing academic initiatives that serve to differentiate ESF from its peers and increase visibility of the College

• Fund, design and construct an ESF dining hall to help lower student meal plan costs and generate revenue

• Facilitate an ownership transfer of the northern properties held in trust by Syracuse University to the ESF College Foundation with the goal of enhancing property revenue generation to provide support for remote facilities and other initiatives

• Hire a chief information officer to oversee the implementation of in-house IT services ultimately resulting in cost savings by eliminating the purchase of IT services from Syracuse University

• Continue to pursue SUNY2020 competitive funding through innovative partnerships that directly fund needed capital projects

• Pursue funding available through the Regional Economic Development Councils

• Grow sponsored research revenue from a baseline of \$16 million in fiscal year 2014-2015 to \$20 million in fiscal year 2020-2021

#### **Recent Accomplishments/Initiatives**

In December 2014, the ESF College Foundation completed the College's first comprehensive fundraising campaign, *The Centennial Campaign*, for ESF. The campaign exceeded its \$20 million goal by \$1.5 million, 18 months ahead of schedule. Annual giving to the College Foundation has risen from approximately \$1.3 million in 2002 to \$3.5 million in 2015. Growth in giving has been realized from non-alumni individuals, private foundations and corporations, reaching 52 percent in the recent fundraising campaign.

As of June 2015, College Foundation assets equaled \$71.4 million compared to total assets of \$6.3 million in June 2002. The Foundation continues to track ahead of schedule to meet the 2020 asset goal of \$100 million.

The ESF College Foundation constructed, owns and operates the College's first student residence, Centennial Hall. The residence was opened in 2011, constructed on land acquired by the Foundation. An expansion of Centennial Hall was completed in 2014. The Foundation also acquired "Block D" for College expansion purposes. In support of the College, the Foundation also acquired a residence in Newcomb, New York, to serve as a conference facility for the Northern Forest Institute. Funding was also provided by the Foundation to construct a new student/researcher residence at the Thousand Islands Biological Station.

Since 2002, the College Foundation has added two gift officers and two business management and accounting positions. A total of eight positions currently support development and College Foundation administration. Five of the eight positions are funded by the ESF College Foundation.

Through the ESF College Foundation, properties have continued to be acquired as investments and/or revenue-generating opportunities, with the new "ESF Legacy Forest Program" developed and launched to acquire 10,000 acres of working forest as a portfolio to provide flexible funds for Foundation growth and academic program support. Forest Properties continues to increase and diversify revenue on state-owned land.

The Office of Government Relations secured \$28 million in funding from three consecutive SUNY2020 grants. Beginning in 2013, in Round II funding for Environmental Health and Environmental Medicine, we secured \$4.5 million for equipment and ARB facilities to establish ESF's Environmental Health

program. Through Round III in 2014 we secured \$20 million to build a water research center in the Inner Harbor of Syracuse to support the College's teaching and research on Onondaga Lake. Round IV in 2015 supported a \$3.5 million SUNY 2020 award for a biomimicry laboratory in Newcomb and needed funds for IT infrastructure on the Syracuse campus.

In 2014, the Office of Government Relations secured a \$2 million SUNY Capital appropriations allocation request from the legislature to enhance the Roosevelt Wild Life Station's vertebrate collections for teaching and research.

Research expenditures have increased from \$13.4 million in 2010-11 to \$16.1 million in 2014-15.

# GOAL 5: Strategically build and enhance partnerships and collaborative relationships

"ESF has enjoyed a long history of productive external relationships. Strategic partnerships and other collaborative relationships build on ESF's strengths and leverage the strengths and needs of our partners. Developing synergistic relationships will strengthen ESF's ability to achieve the goals outlined in the strategic plan.

In 2020, ESF provides policy makers with the peer-reviewed basic and applied science upon which natural science policy is developed. The college serves as a catalyst for economic development through mutually beneficial public and private partnerships, ensuring that science links economic vitality and environmental quality. ESF also serves the greater community by making its resources available to regional companies and academic institutions that cannot afford sophisticated analytical equipment.

Similarly, ESF's academic programs are strengthened through strong collaborative relationships with industry, government and others that provide valuable insight into future educational needs for a productive workforce."

#### Assessment of Vision 2020 Targets

Meeting/Approaching:

- Contribute the science upon which developing natural resource policy is based
- Act as a catalyst for economic development in New York (E)
- Strengthen relationships with other SUNY and private institutions (E)
- Enhance and develop continuing education programs for non-traditional students and industry (A, E)
- Establish additional external advisory councils (E)
- Strengthen and develop links with program-related industries, other educational institutions, alumni and government organizations (E)

#### New:

• Partner with historically black colleges and universities and institutions to develop a connection with potential students for graduate programs with an interest in environmental sciences

#### **Recent Accomplishments/Initiatives**

The ESF faculty actively contributes to their respective fields through journal publications. Publication totals for the past 5 years are: 2011 - 238 publications, 2012 - 314 publications, 2013 - 229 publications, 2014 - 268 publications, 2015 - 247 publications. Web of Science indicates that these articles (1,296 total) were cited in other publications 7,883 times.

Over the past 5 years, ESF faculty have participated in or led hundreds of workshops and training sessions to enhance and develop continuing education programs for non-traditional students and industry, especially in applied areas of research and learning and professional programs.

ESF's expanded relationships with the New York Natural Heritage Program, the New York State Department of Environmental Conservation's various ESF-centric internship programs and other such partnerships are growing, productive sets of collaboration in support of teaching and research in conservation science and sustainable management.

ESF will provide technical and engineering support of Alfred State College's Biorefinery Development and Commercialization Center, and the New Forest Economy, putting a particular focus on bioprocessing, chemistry, landscape architecture and forest management.

Departments and remote ESF campuses, such as the Adirondack Ecological Center and The Ranger School, work with a diverse group of state and federal agencies, academic institutions including school districts, private foundations and institutes, as well as industries. Conservatively, ESF has hundreds of partnerships in support of technology transfer, teaching, and research and development.

ESF is a leader in transfer student recruitment within SUNY. More than 40 percent of new ESF undergraduates enroll as transfer students because of the strong relationships developed between ESF and other institutes of higher education.

ESF continues as a founding partner of the Great Lakes Research Consortium involving 18 U.S. universities and nine Canadian affiliates and provides the Executive Director and administrative offices for this group.

At least two venture start-ups have been created by ESF faculty and one by a student, and at least 10 other students and faculty have engaged with the SUNY Research Foundation Entrepreneur in Residence program.

ESF collaborates with Upstate Medical University (UMU) and Syracuse University (SU) at the Central New York Biotechnology Accelerator and the Center of Excellence, respectively. ESF, UMU, SU and the Syracuse VA Medical Center jointly participate in the Hill Collaboration and Institute of Environmental Health and Environmental Medicine. ESF, Onondaga Community College and many regional public and private partners are working toward the creation of the Onondaga Lake Science Center.

ESF, specifically Analytical & Technical Services, has been successful in creating a partnership with Upstate Medical University, Syracuse University, Cornell, and the University of Rochester to purchase and install an 800 MHz Nuclear Magnetic Resonance Spectrometer at ESF (Jahn Lab) through a multiuser instrumentation grant from the National Institute of Health (\$2.3 million).

ESF has also developed a partnership with Upstate Medical University and Syracuse University which generated a successful National Science Foundation Multi-User Instrumentation grant for the purchase of a new Transmission Electron Microscope (\$1.6 million).

ESF offers newly developed graduate certificate programs in "Bioprocess Engineering" and "Radiation Curing" in collaboration with industrial partners; the latter is an online program.

ESF facilitated a SUNY Research Foundation 4E program of more than \$1.4 million through co-leadership and continued faculty participation.

ESF partnered with Binghamton University to develop an active program for intellectual property management.

ESF partnered with the Syracuse Center of Excellence to establish the ESF Biofuels facility to attract both researchers and start-up companies.

College alumni working for regional companies actively participate with the Career Services Office at the annual Environmental Career Fair hosted by ESF.

### GOAL 6: Respond to the needs of society

"Throughout its history, ESF has addressed the needs of the natural resource and environmental professions and the public. Through outreach, continuing education, demonstration and public service, ESF faculty, staff and students share the results of their teaching, learning and scholarship with business and industry, educational institutions, government agencies and the public.

In 2020, ESF's commitment to outreach and service remain an integral part of the college's mission. Faculty and staff vigorously pursue new knowledge and disseminate these discoveries broadly to improve the Earth's environmental conditions and foster the wise use of natural resources. Citizens, industry and government all benefit through programs for professionals and programs and resources for students and teachers."

#### Assessment of Vision 2020 Targets

Meeting/Approaching:

- Infuse entrepreneurship into ESF's culture
- Provide continuing education and pre-eminent curricula and materials for K-12 science teachers to help meet the national math/science initiative
- Reconfigure existing programs to be most relevant to the needs of society
- Enhance and develop new areas of research (I)
- Engage in large, national and international environmental issues (E)
- Strengthen outreach efforts (E)

#### Renewed/Ongoing:

- Provide business incubation opportunities on campus (E)
- Structure academic programs such that community service is a significant part of the curriculum (service learning) (S)
- Work with the local community to increase the diversity of our workforce (A)
- Implement a homeland security initiative in the area of water and air sensor development

New:

• Connect to local communities in Syracuse and Central New York to diversify outreach and improve inclusiveness with our neighbors

• Deploy programs aimed at youth in both Syracuse (Say Yes, On Point for College, and others) and New York City (SOE and others) to awaken curiosity about the natural world and increase public understanding of environmental science and sustainability

#### **Recent Accomplishments/Initiatives**

ESF in the High School annually engages nearly 700 students in 36 high schools, and with additional new and ongoing programs (e.g., ESF Science Corps Tutoring Program, ESF SCIENCE, Environmental

Challenge), continues to enrich science, technology, engineering and math (STEM) student learning and teacher professional development.

The Institute of Environmental Health and Environmental Medicine was formed as a partnership between ESF, Syracuse University and SUNY Upstate Medical. Recent research includes studying the relationship between community design and incidence of diabetes.

Green infrastructure and environmental entrepreneurship programs are being developed with partners, including Syracuse University and the U.S. Department of Agriculture Forest Service.

The Northern Forest Institute for Conservation Education and Leadership Training promotes interdisciplinary education, outreach and leadership training dedicated to enhancing the human and natural communities in the Adirondacks and Northern Forest region.

The Environmental Studies Student Organization (ESSO) is focused on addressing issues related to food recovery and waste reduction. The group transports unused perishable and prepared food from Syracuse University dining halls to local food pantries on a weekly basis.

World-class research continues to unfold at ESF, including long-standing work with blight-resistant American chestnut, international conservation biology, and renewable energy and materials.

ESF students provide more than 60,000 hours of community service per year, including focused work via the fall Saturday of Service and student-led humanitarian engineering outreach to assist the neediest communities with Engineers without Borders, the Sustainability Society Club and the ESF National Academy of Engineering Grand Challenges Scholars Program.

ESF is among the leading SUNY institutions with respect to research expenditures per faculty member. In 2015-16, \$16.7 million was expended for research with an average grant "book value" of \$60 million to 70 million annually over the past 5 years. During 2015-16, our per capita research expenditure was \$120,000, ranking ESF second in SUNY.

### **GOAL 7: Invest in ESF human resources and physical infrastructure**

"The people comprising the ESF faculty and staff are the college's most important resource, and the campus infrastructure supports all their initiatives.

In the year 2020, ESF is home to a supportive community of workers who have numerous opportunities for professional development and are well compensated. College facilities demonstrate state-of-the-art, environmentally friendly technologies in construction and maintenance."

#### Assessment of Vision 2020 Targets

Meeting/Approaching:

- Promote the professional and personal development of faculty and staff
- Implement a campus physical facilities plan to include new and renovated space
- Provide wireless campus networks
- Implement a comprehensive crisis management plan
- Incorporate renewable energy resources and energy management systems
- Expand our properties contiguous to the Syracuse campus
- Develop a strategic planning assessment tool to provide the framework to measure progress

#### Renewed/Ongoing:

- Improve the ease of doing business; continuing process improvement
- Achieve "green campus" distinction
- Create organizational agility
- Recruit and develop faculty members from underrepresented groups in order to create a cohort of renowned diverse environmentalists (A)
- Create a climate for the development of National Academy of Science, National Academy of Engineering, and Nobel Prize Laureates (I)
- Achieve recognition in the areas of regulatory compliance and health and safety
- Develop the ability to provide seamless business services to local and distant clients
- Develop a fully automated indoor environmental control system for the campus
- ESF faculty and staff will be compensated in the top 10 percent of public-supported colleges and universities
- Implement family-supportive practices for our employees (A)

New:

• Improve and develop physical, digital and organizational systems on campus to achieve comprehensive accessibility, inclusivity and unity for all members of the ESF community

• Increase and enhance technology infrastructure, including Wi-Fi accessibility and bandwidth in teaching and learning spaces

#### **Recent Accomplishments/Initiatives**

The ESF Gateway Center was completed in 2013. This high-performance building provides a centerpiece for campus activities, explores financially feasible and technologically sound strategies to operate using renewable energy, produces its own power, demonstrates a carbon-neutral facility and conserves resources in innovative ways.

The Combined Heat and Power Plant located in the Gateway Center will provide heat and electricity to a significant portion of campus. A new controller is in the process of being installed, which will enhance operational efficiency.

The College will break ground on the Academic Research Building (ARB) in 2016. The ARB is a \$30 million project that will be adjacent to Illick and Bray Halls. It will provide a dozen modern laboratories to campus. The ground floor will include a common space where faculty, students, and staff can gather, formally and spontaneously, to discuss the issues of the day.

A \$2 million award from SUNY will be used to modernize the Roosevelt Wild Life Station's vertebrate collections, finishing out a 5,000-square-foot space in the Gateway Center where collections will be housed in a state-of-the-art facility, supporting both research and teaching.

A formal Internal Control program was implemented that exceeds the requirements of SUNY policy. ESF has always had an Internal Control program, but it lacked the formality of strong programs. We identified a resource to oversee this process so ESF is better positioned to certify the program as required each year by campus presidents.

Various training programs offered by the Office of Human Resources were expanded, including mandatory training programs added online in 2014-2015 that had 1,968 participants (or an average of 394 employees participating in five videos each).

A \$3.5 million SUNY 2020 award for a biomimicry laboratory and data center is just the first seed money for expanding our already impressive standing in biomimetics.

Planning is underway for the Onondaga Lake Science Center, a new education and research facility to be located in the Inner Harbor. It will provide a focal point for ESF research on water issues. From water chemistry to restoration ecology of lakes to conflicts that arise in a populated lake basin and from ESF research, teaching, and public outreach to partnerships with state agencies and NGOs concerned with water, this new ESF center will be a focal point for us and for the Syracuse community.

A \$190,000 SUNY grant is the first infusion of funds to create the ESF Open Academy. The Academy is conceived to extend ESF's reach and impact. It will be a digital platform where ESF can offer courses and certificates and create a new revenue stream. It will be a portal to ESF digital resources, such as the biodiversity data center, student produced videos and public science education assets. It will be an umbrella for all of ESF's outreach work, from the local area to New York City and beyond.

The Office of Human Resources is leading new efforts in succession planning to maintain a base knowledge necessary to conduct business and maintain internal controls, leadership training to aid managers at all levels within ESF, and online appointment processes.

ESF's use of Minority & Women-Owned Business Enterprises consistently ranks in the top five of SUNY schools, and we continue to achieve the increasing targets set by the Governor's Office (this 2015-16 target was raised from 20 to 30 percent).

# **Diversity and Inclusion**

At ESF, the opportunities and needs to elevate considerations of diversity and inclusion in academic work, including the climate of the campus, is of heightened importance. ESF is developing new academic approaches and administrative structures to provide for diversity and inclusion. A new goal – Goal 8 – was developed with the *Vision 2020 Update* to help define and hold to account ESF's efforts in diversity and inclusion. While Goal 8 does hold ESF to account by a statement of a new goal and associated targets, new diversity and inclusion targets were also created across the other seven goals as part of this Vision 2020 Update.

## GOAL 8: Reflect, value and promote a diverse, inclusive, responsive, collegial and collaborative institution for all students, faculty, staff, and other College stakeholders

ESF is more diverse than it was in 2003 when the Vision 2020 plan was written. This follows the national trend that shows current minority populations will soon outnumber the current majority. Given these demographic shifts, ESF must strive to be a reflection of these national changes. As the environmental concerns of this century grow, the environment will need stewards who reflect those differences in peoples across the nation. These changes provide a vast opportunity to evolve with our society while engaging and supporting a broader range of faculty, staff, students and an expanded college community.

ESF is committed to building a diverse college community that is inclusive and supportive of all people, including, but not limited to, people of all races, ethnicities, sexual orientation, gender, gender identity and expression and those undergoing transition. Also included are people of all religions, ages, abilities, socioeconomic backgrounds, veteran status, regions, nationalities, intellectual perspectives and political persuasion.

#### New targets

• Increase recruitment activities targeted at New York state underrepresented students utilizing onand off-campus programs and partnerships, including promotion of EOP and CSTEP programs, partnering with local STEP chapters, community-based organizations, environmentally-focused organizations, SUNY in New York City (formerly the SUNY Center for Student Recruitment), and increasing outreach to Syracuse city schools and STEM-focused high schools throughout New York State to promote ESF as an option for STEM higher education opportunities.

- Hire a College Diversity Officer, per SUNY directive, to be in place by the fall of 2017
- Provide training in a variety of formats and engagement levels for faculty, staff and all students on diversity, inclusion and cultural competence and sensitivity issues
• Review hiring policies and procedures with an eye toward identifying applicants and new hires who demonstrate cultural competence

• Review and revise policies and facilities to ensure broader applicability and accessibility for and support of diverse populations and people of varying abilities

• Increase the involvement of ESF alumni in the CSTEP program particularly to aid current students with career development

• Increase support to students of diverse backgrounds to promote retention

• Achieve *Inclusive Excellence* and an inclusive learning environment that engages faculty, staff and students

## **Recent Accomplishments/Initiatives**

New administrative positions and responsibilities were set in 2015, including appointments of (Interim) Chief Diversity Officer and Director of Student Diversity and Inclusion.

New communication programs and training were instituted in 2015, including redesign of Student Diversity and Inclusion website, establishing ESF student affinity groups and mentoring of faculty and staff.

Student-led conversations, programming, and activism including the Spirit and Essence Banquet, Diversity and Inclusion from the Group Up, and Diversity Week.

We are making progress in achieving a diverse student body. Students of color total a record 13 percent of ESF's undergraduate population in Fall 2015 (up from a 9 percent total in 2010). Women total a record 46 percent of undergraduate students in fall 2015 (41 percent in 2010).

A College Diversity Committee was established to provide guidance, oversight and advice to campus in matters related to diversity (interpreted broadly), with responsibility to develop a College Diversity statement, develop a College Diversity strategic plan (including communication and reporting) and enhance communications on campus-wide, diversity- and inclusion-related processes.

# Aligning ESF's Vision 2020 with SUNY Excels

SUNY launched a "SUNY Excels" initiative in 2015 asking each SUNY campus to develop a 5-year plan with metrics and strategies to improve performance and achieve five system-wide goals related to Access, Completion, Success, Inquiry and Engagement. ESF responded to the call.

## EXCELS PERFORMANCE GOAL 1: ACCESS

ESF will contribute to SUNY's efforts to improve access by serving a larger and more diverse number of enrolled students, maintaining student quality and increasing faculty and staff diversity.

## **EXCELS PERFORMANCE GOAL 2: COMPLETION**

ESF will increase its number of students completing degree programs, certificate programs and non-degree courses for credit. We will strengthen support services to help students complete their programs.

## **EXCELS PERFORMANCE GOAL 3: SUCCESS**

ESF will position students for a successful "launch" into further education, careers, and citizenship by placing increased emphasis on applied learning, multicultural experiences, student support services, and financial literacy.

## **EXCELS PERFORMANCE GOAL 4: INQUIRY**

ESF will define an enhanced research/inquiry agenda through its strategic planning process and will increase sponsored research by \$4 million (25 percent) by 2020.

## EXCELS PERFORMANCE GOAL 5: ENGAGEMENT

ESF will share its expertise and extend the College's economic, social and cultural impact through education, research, outreach and service. We will engage a variety of partners in New York and beyond and seek increased support from ESF alumni to accomplish this.

The five SUNY Excels goals have been aligned with ESF's seven *Vision 2020* goals. Additionally, new strategies were developed by ESF to work toward SUNY Excels goals through 2020.

# Goal to Goal – Vision 2020 Fully Aligned With **SUNY Excels**



## SUNY Excels Goals:

# New Strategies to Meet SUNY Excels

A substantial number of strategies were developed by ESF to better meet SUNY Excels over the next 5 years.

## <u>ACCESS</u>

- □ Implement "3+1" Bachelor of Science program with Beijing University of Chemistry Technology
- □ Add non-thesis masters programs
- □ Recruit additional full-time doctoral students
- □ Enroll 1,000 part-time students studying online through Open Academy
- Launch a branding and national visibility campaign
- Continue to increase out-of-state student recruitment
- □ Implement targeted strategies to recruit diverse students
- □ Appoint a Chief Diversity Officer
- □ Implement recommendations from SUNY's Diversity Task Force
- □ Expand the ESF in the High School program online through the new Open Academy
- Develop online certificate programs for part-time/adult learners
- □ Improve course scheduling and optimize use of facilities
- □ Improve affordability by adding ESF auxiliary dining services

## COMPLETION

- □ Implement Degree Works academic advising software
- □ Fully adopt SUNY's "Seamless Transfer" policies
- □ Provide online courses to enhance scheduling options
- □ Develop online certificate programs to encourage more completions
- □ Increase on-campus housing to meet demand
- □ Explore potential to offer a "self-designed" degree program

## **SUCCESS**

- Continue to offer all students opportunities for applied learning
- □ Re-establish a learning community program
- □ Increase efforts to provide multicultural experiences
- □ Examine general education requirements related to other cultures
- Provide more student support services "in house" rather than through Syracuse University
- □ Promote financial literacy and reduce student loan default rates

## <u>INQUIRY</u>

- □ Increase collaboration in SUNY-sponsored research partnerships
- Construct ARB and Onondaga Lake Science Center
- Establish Biomimicry Data Center and improve campus IT infrastructure
- □ Update ESF's research agenda and identify related faculty hiring priorities

## ENGAGEMENT

- □ Expand the ESF in the High School program through online courses
- □ Seek continued grant support for K-12 outreach
- □ Look for additional START-UP NY partners
- □ Increase recognition of ESF alumni
- Increase alumni involvement in student recruitment and career mentoring
- □ Build ESF's next development campaign based on our strategic plan
- □ Increase alumni participation in giving

# President's Perspectives on ESF's Future Initiatives

As President, my top priority is the continued success of ESF and its students. To achieve that goal, it is imperative to diversify and increase available resources, adapt to changing circumstances, modernize and improve infrastructure, and continually improve a uniquely excellent student experience. The College will continue to pursue initiatives that build upon current and traditional ESF strengths, seize opportunities as they arise and take deliberate steps to position us to meet emerging needs and recognize opportunities on the horizon. We will emphasize those areas where ESF can make contributions that are unique or done uniquely well. We will gauge our success by our impacts on students, science, engineering, management, design, scholarship, society and the environment. In addition to the other priorities outlined in this document, additional clear and present opportunities for impact include the following general areas for which ESF has, or will establish programs, centers or institutes.

**Excellence and Inclusion in Education:** ESF is privileged to educate environmental leaders of tomorrow. As the top-ranked environmental college in the country, ESF maintains an exceptional atmosphere of discovery and learning reinforced by access to faculty possible only on a small campus combined with the creative drive of a doctoral degree-granting, research-intensive campus. Creating opportunities for students to gain hands-on experience through team or independent research, internships, international travel and other experiential means is well established and expanding at ESF. As an environmental leader, ESF also accepts a responsibility for communicating knowledge to the public, learning about the needs of decision-makers on the ground, increasing public science literacy and broadening participation in STEM majors. I envision a campus community continuing to be rich and diverse in perspectives; a community that welcomes, challenges and supports all joining it.

**Relationship of Humans to Environment:** Deeper understanding of the complex and diverse kinds of relationships between humans and the environment – natural and built – is as critically important as is communication of nuanced knowledge to the public; and, as the population becomes increasingly urban, and children spend more time in a virtual rather than natural world, these needs will become even more acute. Examples of the College's exploration of human-environment relationships include the Center for A New American Environmentalism, Center for Native Peoples and the Environment, Center for Cultural Landscape Preservation, Center for Community Design Research, Institute for Environmental Health and Environmental Medicine, and a center focused on urban infrastructure. We will further explore Traditional Ecological Knowledge, ecological literacy, and realize an elevated focus on issues of environmental health and environmental justice. ESF will continue to invest in a community of scholars curious about nature, humans and all aspects of the well-being and interactions between the two.

**Nature-Inspired Design:** ESF has a long history of using knowledge of natural processes, ecosystems, animals, plants and microbes to discover more efficient and sustainable ways to meet human needs. Examples of nature-inspired solutions can be found from chemistry and landscape architecture to sustainable construction and forest management. Gaps in the national capacity to realize the full potential of biomimicry to solve problems present an enormous opportunity for a creative fusion of scientific natural history, taxonomy, field biology, design, biodiversity informatics and what might be

termed "evolutionary entrepreneurism." ESF has impressive strengths in natural history, organismal biology and nature-inspired design and, thus, is well positioned to play a leadership role. ESF will play a role in the creation of an "adaptation" or circular economy that constantly improves the efficiency and sustainability of human industry by translating knowledge of evolutionary adaptations of organisms and natural systems into ever-improving designs, processes, materials and products.

Adapting to a Changing World: A growing human population, atmospheric warming and a host of human practices are contributing to rapid global environmental changes that threaten human welfare, ecosystem functions and biological diversity. It is imperative that we detect, monitor and creatively adapt to such changes. For instance, rather than accept the decline and extinction of a key North American forest species induced by a human-introduced pathogen, ESF's American Chestnut Research and Restoration Project has created a path to the species' recovery. In addition, ESF's approximately 25,000 acres of forests, field stations and research sites has the capacity to become an ecological, biodiversity and climate change observatory for New York and beyond. I see ESF capable of forecasting, and helping communities adapt to environmental change with the goal of increasing the quality of human life, while also conserving the integrity of the natural world.

*Scientific Natural History:* Observational and descriptive studies of individual species, comparative studies among species, studies of the complex networks of organisms in ecosystems, and understanding the interplay of biotic and abiotic factors in the biosphere create fundamental knowledge essential to the life sciences. As Walter Tschinkel and E. O. Wilson recently wrote in an article in *BioScience*, "With most species yet undiscovered and the vast majority of those known yet unstudied, most biological phenomena are probably also unknown and unimagined." Closing this knowledge gap requires renewed emphasis on taxonomy, autecology, biogeography, phylogenetic systematics and biodiversity informatics. Projections that we have entered the early days of a sixth mass extinction event add urgency to exploration of biodiversity. ESF is uniquely positioned to contribute to the growth of knowledge of the biosphere and its origin, evolution and organization.

**Solutions-Inspired Discovery and Collaboration:** ESF is a leader in translating scientific knowledge into effective policy. Our long-term monitoring of effects of acid precipitation was the foundation for a national response to this pollution source, and ESF is poised today to address threats of rapid climate and environmental change. ESF has an unmatched tradition of driving solutions for such environmental challenges. From the recovery of New York's forests in the 20<sup>th</sup> century, the restoration of Onondaga Lake and the return of the American chestnut to improved processes for the paper and pulp industry, development of biomass alternative fuels and advancement of natural products chemistry — to name only a few — ESF has an extraordinary track record of making discoveries leading to creative solutions, and doing so in cooperation with industry, government, NGOs, and sister academic institutions. This problem-solving determination and collaborative spirit will continue to be expressed in many forms at the College. ESF has a community of scientists, engineers, communicators, managers, designers, planners, policy experts, and scholars who will continue to create and apply fundamental scientific knowledge to solve great problems of the environment, science and society.

Starting in the 2017-2018 academic year, ESF will begin a full effort in strategic planning in order to replace *Vision 2020* and this *Update*. Assessments of ESF's strengths, weakness, opportunities and threats (classic S.W.O.T analyses) will be conducted for each unit and department, with these joined to produce a new, strategic understanding of the College. Stakeholders both internal and external to ESF, including alumni and other partners, will be fully and formally engaged in the planning process. A broadly shared understanding of the priority issues that need to be resolved by ESF will be developed, along with the capacities and limitations that will control levels of resolution. Together ESF and its stakeholders will devote the time and intellect necessary to identify and implement the best path for the College beyond 2020.

In updating *Vision 2020,* it became evident that ESF might need to develop new goals related specifically to the graduate student experience and the research enterprise. Community-based information was not available for this *Update* to support these new goals. This information can only come with the future strategic planning.

Additionally, the College is embarking on two new areas of philosophical and principled need and challenge: sustainability, and diversity and inclusion. While both of these are covered to some extent in the Vision 2020 Update, it is expected that the new College-wide committees – the Sustainability Committee and the College Diversity Committee – will do much with regard to planning and action at ESF, and set the stage for this to be fully accounted for in a new ESF strategic plan that will fully replace Vision 2020 and this Update in the Year 2021.

It is expected that much new input will come over the next few years to guide ESF beyond 2020, and that this will put ESF in good stead with those full strategic planning efforts that are slated to occur from 2017 to 2020.

# Acknowledgements and Recognitions

## 2015-2016 Strategic Planning Steering Committee<sup>1</sup>

## **2015 Committees on Transdisciplinary Questions**

What are the relationships between humans and the environment?

What are earth's species dynamics?

How can we meet human needs while conserving the environment?

How can we adapt to changing environments?

## **2015** Planning Committees

The Undergraduate Experience

Organization

## **ESF Office of Communications**

Contributions included: website construction and maintenance, including the development of a new banner; development of a graphic for planning and updating used in flyers and posters; and editing the first and third drafts of the Update.

# 2015-2016 Unit and Department Reports on recent accomplishments, goals and differentiators (at the behest of the SPSC)

ESF Newcomb Campus – Adirondack Ecological Center; Business Office; Department of Chemistry; Office of Communications; Department of Environmental and Forest Biology; Department of Environmental Studies; Department of Environmental Resources Engineering; Department of Forest and Natural Resources Management; Forest Properties; Honors Program; Human Resources; Department of Landscape Architecture; Moon Library; Office of Athletics; Office of Financial Aid and Scholarships; Office of Instruction and Graduate Studies; Office of Outreach; Office of Research Programs; Office of Undergraduate Admissions; Department of Paper and Bioprocess Engineering; ESF Wanakena Campus – The Ranger School; Student Affairs Division; University Police Department; and Writing Program.

## Bibliography of documents used in the Vision 2020 Update

Diversity and Inclusion from the Ground Up, December 2015

ESF Strategic Planning Document, May 7, 2015

<sup>&</sup>lt;sup>1</sup> Strategic Planning Steering Committee members (alphabetical): Scott Bergey, Kelley Donaghy, Maureen Fellows, Margaret Foley, Bob French, Brenda Greenfield, Richard Hawks, Mark Lichtenstein, Anne Lombard, Valerie Luzadis, Chris Nowak (Committee Chair), Neil Ringler, Joe Rufo, Sue Sanford, Chuck Spuches, Scott Shannon, Art Stipanovic and John View

ESF Unit and Department reports 2015-2016 – recent accomplishments, goals and aspirations, and differentiators.

FOUNDATIONS FOR A SECOND CENTURY, ESF's Strategic Plan, Fall 2015 (Version 1: 9/15//15)

Middle States Reaccreditation, 2011 Self-study Challenges and Recommendations

Middle States Reaccreditation, AY 12/13 SUNY-ESF College-wide Metrics

Middle States Reaccreditation, Advancing Sustainability at ESF, A Selected Topics Self-Study for MSCHE Reaccreditation, October 2011

SUNY Excels 2015 Performance Improvement Plan, Attachment 1: Narrative

SUNY Excels: Date Executive Summary, January 2016 (presented in "Envir Sci Forestry SUNY Excels Data Summary Graph and Detail Tables\_Final.xlsx")

Transdisciplinary Question #1: What are the relationships between humans and the environment? Committee report dated March 2015

Transdisciplinary Question #2: What are earth's species and dynamics? Committee report dated March 2015

Transdisciplinary Question #3: How can we meet human needs while conserving the environment? Committee report dated March 2015

Transdisciplinary Question #4: How can we adapt to changing environments? Committee report dated March 2015

Undergraduate Strategic Planning Committee Report, March 2015

Vision 2020, SUNY COLLEGE OF ENVIRONMENTAL SCIENCE AND FORESTRY, circa 2003

**APPENDIX B** 



# Inclusion, Diversity and Equity Strategic Plan

Fall 2016

## **College Inclusion, Diversity and Equity Committee**

http://www.esf.edu/ide

Members of College Inclusion, Diversity and Equity Committee:

Sarita Bassil	Robin Kimmerer			
Scott Blair	Michael Klaczko			
Tim Blehar	Anne Lombard			
Kelley Donaghy	Matt Potteiger			
Heather Engelman	Susan Sanford			
Annette Hightower	Timothy Volk			

A choir singing one part in unison can make beautiful music, but the magic is multiplied with the inclusion of the harmonies that complement the melody and add fullness to the sound, and those parts that at times provide discordance to challenge the expected. This is why *all* voices need to be at the table.

--Dr. Nancy Barbour, 2016 Feinstone Award Recipient, closing statement, 10/26/16

## I. An Introduction to Inclusion, Diversity, and Equity at ESF

In April 2016, the State University of New York – College of Environmental Science and Forestry (ESF) launched its' first college-wide committee focused on equity and inclusion at the college. One of its first actions was developing an Inclusion, Diversity & Equity Strategic Plan. Through implementation of this plan, ESF will continue to be a leader in the study of science, engineering, design, policy and management related to the environment and achieves this goal by becoming a more inclusive institution to meet the challenges faced in an ever-changing world. In addition, by joining the State University of New York's system-wide strategic focus on diversity, we engage with a robust system of colleges and universities united in building a more supportive and inclusive environment for students, faculty, staff, administrators and alumni to engage in dynamic fields of study.

Connecting with our college community to develop a dynamic diversity strategic plan was of the utmost priority of the ESF College Inclusion, Diversity & Equity Committee. By creating three different rounds of listening sessions and numerous individual and small group presentations across campus, our committee is proud to have been able to partner with a wide array of student groups, faculty and staff colleagues and alumni in building a college-wide dialogue. In addition, using diversity plans for institutions such as Penn State University, Michigan State University, Cleveland State University, and the SUNY Campus Guide for Strategic Diversity & Inclusion Plan allowed our committee to develop a document founded on the good work of others that is specific to ESF. We look forward to partnering with our colleagues across the College to implement the plan to attain our overarching goal of creating a more inclusive, diverse and equitable community.

#### A. Mission and Vision

The SUNY College of Environmental Science and Forestry is committed to creating and sustaining a diverse community that promotes equity and inclusion for all its members. Diversity that arises from differences such as, but not limited to, gender, race, ethnicity, ability, sexual orientation, socioeconomic status, national origin, or religious traditions is central and indispensable to the institutional excellence and mission of the College.

We, as the College of Environmental Science and Forestry, will achieve a diverse, equitable, and inclusive community by eliminating barriers to full participation in curricular, co-curricular, and workplace environments, and promoting the SUNY and ESF institutional structures, practices, policies, and spaces that respect, value, and support differences through inclusive excellence. Inclusive excellence is our on-going commitment to recognizing that success is measured by how well a community values, engages, and embraces a rich diversity of ideas and people.

## B. Plan Development - History of Diversity and Inclusion at ESF

ESF is highly focused on the study of sciences, design, engineering and management of our global environment and natural resources. The college enrolls just over 2,400 students enrolled at the college from undergraduate students to graduate level doctoral students. Approximately half the students and 30% of the faculty are female with about one-third of the total student body comprised of graduate students. Approximately 40% of incoming undergraduate students transfer to ESF from other institutions.

ESF began as an all-male, predominately white institution in 1911. There were no women students during the early decades and by 1969, women comprised 5.6% of enrollment.

"The early 1970s saw the first female trustees appointed to the board. The first woman graduated from the Ranger School in 1974. ... A woman's [Woodman] team was begun in 1973 and won an international competition in 1975. And by 1974, an affirmative action program was underway at ESF to increase minority recruitment. In 2011, 40% of the 2,200 enrolled students were female (Centennial Celebration Display in Moon Library)."

Beginning in 1978 ESF was an exclusively upper-division college before it officially resumed educating freshmen and sophomores in 1990 with an incoming class of 50 first-year students.

Once the college returned to enrolling full undergraduate classes, the Office of Undergraduate Admissions began actively recruiting students of color. These students founded the college's Baobab Society ca 1991, under the advisement of Admissions Counselor Mrs. Eva Williams, "to ensure the multicultural outreach and enlightenment of the college and Syracuse communities. [It] host several events throughout the academic year to celebrate the many different cultures represented at the SUNY College of Environmental Science & Forestry."

The Office of Multicultural Outreach grew from these institutional and student initiatives into a onewoman (Dr. Carmen McCoy-Harrison) office housed in the Division of Student Life and reporting to the Vice President of Student Affairs in 1999. Its' Director maintained a hand in enrollment, but primarily provided support mechanisms for students on campus. Following McCoy-Harrison's untimely death, the office was restructured to center on issues internal to the college, rather than "outreach" which implied efforts focused off property. In 2004, the renamed Office of Multicultural Affairs was moved within the Office of Instruction and Graduate Studies under the Vice President of Academic Affairs. Student and faculty support remained a priority of the office, but program development to enhance diversity across campus was anticipated. The Office's best-known programs were the Collegiate Science and Technology Entry Program and a "Lunchtime Learning" series, which invited the college community to reflect on the natural environment from different cultural perspectives. Director Dr. Raydora Drummer enjoyed the dedicated and paid assistance of one half-time employee (C-STEP) and three graduate mentors. She was also guided by a Diversity Council comprised of students, faculty and staff, until the Council was disbanded in approximately 2008. Despite the move of the office, in 2014, its primary focus remained on students, rather than on the faculty and staff that also shape their ESF experience.

The Office lost momentum with the extended leave of the Director in 2013, although the addition of a half-time temporary Coordinator (Ms. Nory Mitchell) backfilled student support for the semester of spring 2014. A summer 2014 search for a full-time Coordinator was closed and thus the position unfilled due to a hiring freeze initiated after interviews.

During the time the Multicultural Affairs office sat vacant, students and alumni searched for support on their own. The bylaws of the Undergraduate Student Association first referenced its own Director of Student Affairs and Diversity position when amended September 9, 2013. The Students of Color and Alumni Association Facebook group (unaffiliated with the ESF Alumni Association) launched October 2013 "to organize a think tank and action committee to support students of color who are attending ESF. We also aim to raise awareness of ESF among candidates of color and devise a recruitment strategy."

A Multicultural Student Advisory Board launched around 2011, and transitioned to the Student Diversity Advisory Council ca 2015 joining The Baobab Society as organizations to support students at ESF. The Kings Court launched in the Fall of 2013 to provide specific support for underrepresented male students and similar affinity groups followed in Fall 2015 in support of underrepresented women (Dorothy Cotton Scholars) and ESF's LGBTQ community (Rainbow Scholars) under the direction of the Student Diversity & Inclusion Initiatives Office.

In January 2015, restructuring within the Office of Student Affairs reallocated half of the Coordinator of Academic Support Services time to direct service and support to underrepresented students.

In response to SUNY mandate that each campus have a Chief Diversity Officer, it was announced that the Dean of Student Affairs Dr. Anne Lombard would, in the addition to her current tasks, also serve as such on an interim basis. In this role, she advised the President and Executive Committee and provided leadership in "identifying ways to make the ESF community as diverse as possible and to meet the needs of all of our current and future students" along with support for our faculty and staff in matters of diversity. In May, 2015, it was announced that Scott Blair's temporary half-time extra-service duties with Academic Support Services and Diversity and Inclusion would be expanded for the fall semester, as the full time Director of Student Diversity and Inclusion Initiatives, housed within the Division of Student Affairs. On June 13, 2016, the mantle of Interim Chief Diversity Officer shifted to the Director of Student Diversity and Inclusion.

Alarmed by the limited scope of the interim CDOs responsibilities, by virtue of a resolution in Feb 2015, Faculty Governance "encouraged the President to broaden the duties of the Chief Diversity Officer

beyond just considerations of student diversity, to reaffirm the importance of College-wide diversity and its inclusion in the College's strategic plan. They also "encouraged the development of a college-wide diversity plan that assesses the current climate for women and minorities, and increases the awareness and the intentionality of diversity related initiatives for students, faculty, staff, and administrators" and that said plan include an academic component.

A search will be launched during spring 2017 for a full-time permanent Chief Diversity Officer in advance of the SUNY directive to fill this position by fall 2017.

Preliminary interviews of students in the early 1990s (Griffin 1991; Heffernan et al. 1992) indicated that the College failed to support women students in their quest to "acquire professional attributes and career skills.... [Rather] the climate served to discourage many women educationally and professionally." Female students felt that they were treated differently than male students, both by their male peers and faculty. They reported being harassed and discriminated against in a "climate of disregard", with a clear need for expanded mentoring networks and more women on the faculty, as authors of readings, and as visiting speakers.

Students reported intrusive paternalism, disdain, or isolation in this environment. Sexist jokes, remarks with sexual overtones, comments on "the weaker sex", the promotion of "macho" behavior, and self-proclaimed male chauvinism by faculty and staff further devalued women. And while the women students recognized a personal responsibility to establish the boundaries of acceptable behavior, they found this chore to be unfairly distracting from their studies. Based on these findings, the President's Task Force on the Climate for Women worked to develop a long-term strategy to encompass a diversity of programs and mechanisms to reinforce positive behaviors and educate all levels of the campus community, including administrators and potential students (Heffernan et al. 1993). From these recommendations, the College President released an action plan to increase knowledge of standards and expectations, raise sensitivity and responsiveness to women's issues and needs, increase the number and presence of women, and strengthen support systems and mentoring networks for women (Whaley 1993).

ESF commissioned an independent Report to the ESF Community on the Climate for Women Initiative in 1994 (Widmayer and Nester 1994). This report articulated that ESF needed institutional channels to bridge its highly compartmentalized structure. It affirmed that ESF should provide an appropriate environment for students and faculty who are women and persons of color, and increase awareness of

subtleties of discriminatory language and definitions. Finally, it suggested that ESF should designate an ombudsman/advocate who would work with faculty, students and staff in all areas related to bias and discrimination.

The 1994 Update to the President's Action Plan (Whaley 1994) highlighted increased knowledge of standards, expectations and desired outcomes following discussions in 1993 and early 1994; workshops; new student orientation; the completion of "The Widmayer Report" (Widmayer and Nester 1994); the increased number and presence of women on campus as 5 of the 8 appointments from January 1993 to September 1994; the dissemination of a sexual harassment poster that clearly identified issues of harassment and provided contact information; the scheduling of preliminary training for the ESF contact network; and the growing mentoring opportunities and networks for women, such as mentoring dinners, advisory group to identify topics, issues, and available resources for conferences, workshops, and seminars.

A 1995 Survey of the ESF Working Environment revealed some success in the efforts to address sexual harassment and related issues on campus (Fellows et al. 1995). However, there were still disproportionately low numbers of women faculty in all departments at the College. Unfortunately, women faculty declined to participate in this Survey, fearing identification by the requested demographic information.

"Women's issues" generally did not fall under the umbrella of the Multicultural Affairs/Diversity Office, although gendered issues could. However, each iteration of this office has worked with the ESF Women's Caucus, which first convened in November 1994, to raise consciousness about women's concerns, to work for change to improve the climate for women at ESF, to foster community, and to serve as a respectful forum for diverse ideas. Caucus goals were, and remain, to increase the number of women students and faculty at ESF, find ways for women to better communicate and coordinate or sponsor activities that benefit them, and to improve services for all ESF families.

The ESF Women's Caucus is working on the 19th year of the college-wide *Women in Scientific and Environmental Professions (WiSE Professions) Speaker Series.* Speakers often participate in mentoring sessions with students across campus. A graduate seminar class complements the speaker series to allow participants to learn about the issues and obstacles facing female professionals and discuss strategies for professional development. This course remains an "exemplary teaching resource" by Engineering Pathway and Content Matters. The College adopted a "Policy on the Extension of the Continuing Appointment Decision (i.e., to Stop the Tenure Clock) in September 2014, to clarify available options to faculty members to extend the period for tenure and promotion decisions in the event of circumstances that qualify for the Family and Medical Leave Act. Extensions for other reasons (e.g., military leave or catastrophic event) are also feasible, and employees are directed to discuss their situations with Human Resources. By increasing transparency in the procedure, the authors and governing body hope to remove stigmatization and reduce biases in taking parental or other qualified leave. During the stoppage, consistent with the current union contract, faculty would change title from tenure to a non-tenure track, and either reduce salary or take leave without pay. While these are "best practices" under current UUP contract, they compromise employees professionally (by stepping out of rank) and financially (reduced pay or becoming part-time), and tend to curtail retention and negatively impact women more frequently than men. In May 2015, College Governance resolved to request that the SUNY administration, working with the University Faculty Senate and the UUP, address the implementation of Family and Medical Leave in a systematic way, to include in contracts means to "stop the tenure clock" without these sacrifices to promote retention of valuable employees and increase employee morale, while addressing issues of equity.

Forbes.com ranked ESF No. 3 on its 2010 list of best colleges for women in science, technology, engineering and mathematics (Doss 2010). Colleges were ranked only on a percentage basis on "how closely they approached an ideal where STEM classrooms look like the school overall." It is distinctly possible that because of the nature of ESF's specialized programs, more classes than usual could qualify as STEM, and inflate the numerator in that equation.

The overall climate for women has not been formally assessed since the 90s reports. Two informal "Coffee Breaks" for female faculty in the summer of 2013 gave the general sense that biases are no longer overt, but there are cumulative impacts of lots of little and subtle ones. Faculty were specifically concerned with pay inequity, inflexible tenure schedules, and a lack of a faculty manual that provided all faculty with the information needed to access resources. A student-led initiative in fall 2015 "Diversity and Inclusion from the Ground Up" also pointed to the cumulative toll of "microinequities" and stereotypes. Disappointingly, anecdotal reports in 2016 indicate that inequity and safety are still concerns for women students.

In recent years various offices and organizations within the college have adopted practices or sponsored changes to create a more inclusive and supportive environment for all students, faculty and staff.

In efforts to better position all new faculty and staff for success, Academic Staff Evaluation Procedures for Personnel Action Recommendations are articulated in Academic Update 10-6, and referenced in the Faculty and Professional Staff Handbook (http://www.esf.edu/hr/handbooks/handbook.htm. Similarly, "Expectations and Responsibilities for Faculty Mentors and Graduate Students" were reviewed over the course of the 2015-16 academic year, and approved by Academic Governance in May 2016.

The wording of an Inclusive Excellence Statement (i.e., "that understanding individual differences and broader social differences will deepen our understanding of each other and the world around us. In this course, all people...are strongly encouraged to respectfully share their unique perspectives and experiences") was recommended for inclusion in course syllabi in Dec 2015.

The bylaws of Faculty Governance were amended in May 2015 to update the body's title to Academic Governance and to expand representation (including the right to vote) from only faculty and limited research titles to also include 30 elected staff members represented by UUP and students serving on the body's standing and Ad-hoc committees.

For roughly two decades, representatives from University Police, Physical Plant, and the College-wide Personal Safety Committee have regularly toured the campus after dark in a "Twilight Review" to find ways to better improve personal safety on campus. This program led to better lighting throughout campus and installation of the integrated Blue Light two-way communication system to connect campus users with University Police. These impacts have benefited all students, staff, faculty, and visitors to the institution.

The Office of Human Resources now tracks and publishes "Affirmative Action Reports" comparing the percentage of employees in underrepresented groups to the pool of potential employees in those groups on an annual basis. This information is used partly to determine if job announcements are reaching a wide enough pool of applicants.

Also in May 2016, Academic Governance reviewed and approved a "Chosen/Preferred Name Procedure" to allow students to use a preferred rather than legal name (or its common abbreviation) in a variety of systems internal to the college.

The Undergraduate Student Association drafted a "Resolution Recommending the Implementation of Accessibility Adjustments for People with Disabilities on the ESF Campus" over the 2015-16 Academic Year. The resolution was put aside by the Association without passing to Academic Governance, in the expectation that the College IDE Plan would facilitate appropriate improvements faster than the resolution process would allow.

Strengthening Our Community Engagement (SOCE) Task Force was created in March 2016 at the recommendation of the President's Executive Cabinet and the Academic Governance Executive Committee. A scoping survey was distributed in May. Initial metrics were released in the summer, and an interim report with emergent themes and suggestions to address them was released October 7, 2016. Specifically, a lack of diversity is noted under Culture/Diversity, and that "not everyone feels welcome." To remedy this, the report recommends building an inclusive scholarly community; explain, share, and teach about diverse cultural backgrounds; host more family-centered or fun social events, with senior staff and faculty attending; and enhance opportunities for face-to-face interactions. Inclusion and Equity suggestions occur under headings devoted to Facilities/Sustainability (improving and maintaining infrastructure, quiet spaces, better technical support, upgrade equipment; Leadership (addressing inequity in teaching, advising and research loads among departments, cross-disciplinary collaboration), Communication (improved and centralized communication routes, creating opportunities to express concerns), students (improve opportunities for commuter students to engage with campus) and Teaching/Faculty/Staff (improved mentoring of new employees and professional development of faculty).

With the results of these various climate surveys, ESF's data was not uncharacteristic for the time when compared to other institutions. However, a SUNY-wide report revealed that across the system, only 27% of full professors were women and that salary disparities were significant even after controlling for years of experience and discipline; ESF was notable for its "unusual dearth of women faculty" (Haignere 1998; Frenette 1999), but omitted in the follow-up report (Burke and Dangler 2009). Climate reports at MIT and at an anonymous small, rural land-grant institution noted inequities at their institutions extended beyond salaries and sheer number to space, resources, and inclusion in positions of power (Phillips-Miller et al 1999; Zernike 1999; Smallwood 2002). In a national study, women with identical resumes as their male counterparts that applied for lab manager position were viewed as less competent and worth

less mentoring and lower starting salaries if they were offered positions (Moss-Racusi et al 2012). Similarly, women and people of color with impeccably written letters of introduction and interest were systematically less likely to get responses from the prospective major professors than were white men, and less likely to get positive responses from those that did reply (Milkman et al. in press).

## C. Summary of Strengths, Weaknesses, Opportunity and Threats (SWOT) Analysis

Part of addressing issues related to inclusion, diversity and equity at ESF is to understand where we currently stand on these issues based on the data available. While the information presented may not cover all the perspectives that are desired, it is the information that is available and can be shared within the context of state and federal regulations. There is a specific goal and strategies listed in the IDE plan to improve the collection and sharing of data on these issues as one way to assess progress at ESF.

## Faculty and Staff

The data for employees at ESF is separated into three categories, administrators, faculty, and staff. Between 2010 and 2016 the number of administrators at ESF has ranged from 26 to 22 people. During that time the percentage of women has ranged between 30.4% in 2012 to 42.9% in 2015 (**Figure 1**). The number of minorities in administration ranged from a high of 11.5% in 2010 and has been below 5% since 2012.



Figure 1. Proportion of senior administration that are male or female and minorities from 2010 – 2016.

Faculty at ESF includes full time faculty in the departments on main campus, those at the Ranger School and library staff. During this time frame the number of faculty has ranged from 137 in 2010 to 128 in 2012. The percentage of female faculty has ranged from 25.5% in 2010 to a high of 33.1 in 2014 and currently 30.8% of the faculty are female (**Figure 2**). The percentage of minorities in the faculty has changed very little over time ranging from 12.4% in 2010 to a high of 14.8% in 2012. Currently minorities make up 13.1% of the faculty at ESF. Additional data on faculty/staff are included in Appendix B.



Figure 2. Proportion of faculty that are male or female and minorities from 2010 – 2016.

The number of staff at ESF ranged from 206 in 2015 to 226 in 2014. Over the 2010 to 2016 period the percentage of women on staff was fairly stable ranging from 45.2% in 2010 to 47.3% in 2016 (**Figure 3**). There was also little variation in the percentage of minorities on staff, ranging from 4.3% in 2010 to 6.2% in 2014 and this is currently at 5.8%. Additional data on faculty/staff are included in Appendix B



Figure 3. Proportion of staff that are male or female and minorities from 2010 – 2016.

There are a variety ways that data can be presented and tracked as part of the IDE initiative at ESF. As noted above there are some restrictions on how data can be presented due to federal and state regulations. Establishing a benchmark so that changes and issues related to IDE can be assessed over time as the plan is implemented will be important. A summary of the current distribution of employees at ESF in October of 2016 reveals that across all categories of state employees 41.1% are women and 9.2% are minorities. The proportion of females is highest in the CSEA/PBA category (52.5%) and lowest for the faculty category (31.3%). Minorities make up 0% of the management confidential category of employees and 14.8% of the faculty. Additional data on faculty/staff are included in Appendix B.

Table 1. Distribution of state employees by gender and race/ethnicity breakdown separated by faculty and staff for October 2016. Note: data does not include graduate assistants, visiting or temporary employees

	Employees	White	Black	Asian	American	Hispanic/	Male	Female
					Indian	Latino		
CSEA/PBA	101	95	5	0	0	1	48	53
Management	20	20	0	0	0	0	12	8
Confidential								
UUP	109	101	3	3	0	2	63	46
Faculty	128	109	4	11	1	6	88	40
TOTAL	358	325	12	14	1	6	211	147

Information is also available for the 125 Research Foundation of SUNY employees at ESF. This data from October 2016 shows that 63.2% of employees were female and that only 5.6% were minorities (**Table 2**).

Table 2. Distribution of Research Foundation of SUNY employees by gender and race/ethnicity in October 2016.

	Employees	White	Black	Asian	American	Hispanic/	Male	Female
					Indian	Latino		
Research	125	118	0	4	0	3	46	79
Foundation								

## Undergraduate Students

Data is presented for male and female incoming freshmen and transfer students for the time period of 2010 to 2015. The proportion of incoming females has generally increased over time, with a decrease in 2013, from 39.4% in 2010 to 45.3% in 2015 (Figure 4). Females have consistently made up a larger proportion of incoming freshmen than transfers over this period from a high of 56.1% in 2011 to 47.3% in 2014. The proportion of females among incoming transfer students has consistently been much lower ranging from 27.8% in 2014 to 38.7% in 2015.



Figure 4. Incoming male and female students in the first-year (freshmen) and transfer groups at ESF from 2010 - 2015

There has been a steady increase in minority undergraduate students at ESF from 2010 to 2015 (Figure 5). In the fall of 2010 10% of the undergraduate students were minorities. By the spring of 2015 the proportion of minorities had increased to 18.7%. The largest increase in minority students has been among Hispanics who have more than doubled among the undergraduate student population from 48 students in the fall of 2010 to 90 students in the spring of 2015. Subtle increases also occurred in the Multiple Race Domestic group, which had 28 students in the fall of 2011 when the category was first identified and 40 students in the spring of 2015. The Unknown group also changed over time. From the fall of 2010 to the spring of 2012 there were no students in the unknown category but by the spring of 2015 there were 68 students in this category. Some of these changes may be associated with the definitions of these racial/ethnic groups and how students identify themselves. There has been a small decrease in Asian or Pacific Islanders and little change in the black population of undergraduate students over this period of time. Additional data on students is included in Appendix B.



Figure 5: Undergraduate students each semester from 2010 – 2015 at ESF by racial/ethnic group. (Note: Acronyms for racial/ethnic categories are: AIA – American Indian or Alaskan Native, API – Asian Pacific Islander, BLK – Black, Non-Hispanic, HSP – Hispanic, MRD – Multi Race Domestic, NRA – Non Resident Alien, UNK – Unknown).



Figure 6: Graduate students each semester from 2010 – 2015 at ESF by racial/ethnic group. (Note: Acronyms for racial/ethnic categories are: AIA – American Indian or Alaskan Native, API – Asian Pacific Islander, BLK – Black, Non-Hispanic, HSP – Hispanic, MRD – Multi Race Domestic, NRA – Non Resident Alien, UNK – Unknown)

## II. Diversity & Inclusion Strategic Goals and Strategies

## A. A Framework

The goal areas of the plan are based upon needs and wants as expressed by students, faculty, and staff of the college. At the beginning of the development of this plan, a set of goals were identified by the members of the committee. These goals were developed further, revised, and changed through a process of three rounds of listening sessions and tabling in Gateway in order to respond to the concerns of the broader ESF community. These goals are then presented in a hierarchical order with overarching goals being listed first and more specific goals being listed later. The plan is intended to be a living document with the intent of being reviewed on a biennial basis.

In brief, the goals were developed to:

- 1. Define and integrate inclusion, diversity, and equity at ESF
- 2. Create accountability and visibility of diversity, equity, and inclusion at ESF
- Integrate inclusion, diversity, and equity into the education and research done by faculty, staff and students alike
- 4. Develop inclusive recruitment and retention strategies for ESF students, faculty, staff and administrators.
- Increase the physical and technological accessibility of ESF to people in and outside of the college
- 6. Increase inclusion, diversity, and equity at ESF with the support and involvement of ESF alumni
- 7. Increase the inclusion, diversity, and equity of international students at ESF

Strategies were developed in order to attain each goal; the intent is not to restrict or be limited by these strategies in achieving the articulated goals but to suggest starting points. These strategies were developed in a process similar to that of the goals, with the first draft developed by members of the committee which was then revised, clarified and expanded through participation of the ESF community.

#### B. Goals and Strategies to Guide College-Wide Change

**Goal 1**: Create a shared understanding of inclusion, diversity and equity and develop a welcoming college climate and continuously work toward improvement where issues can be openly and comfortably discussed among students/faculty/staff/administration

<u>Strategy #1:</u> Engage with existing assessment instruments (e.g. National Survey of Student Engagement (NSSE)/Harvard's Collaborative on Academic Careers in Higher Education (COACHE)/SUNY Student Opinion Survey (SOS)) to identify areas of improvement, continued challenge and institutional action.

<u>Strategy #2:</u> Enhance current data collections and communication of internal diversity and inclusion related data, both quantitative and qualitative, to assist institutional growth and action by providing annual updates to the College community. <u>Strategy #3</u>: Implement and require cultural competency workshops, annually, at a minimum, for students, faculty, staff and administrators. For example create programs and opportunities to develop an understanding of the concepts of privilege, microaggressions, tokenism, and intersectionality.

<u>Strategy #4:</u> Highlight peer-reviewed data outlining the benefits and best practices for implementing inclusion/diversity/equity for ecosystems and human systems in the diversity strategic plan, as a part of on-campus trainings and programming initiatives. <u>Strategy #5:</u> Review all College communications (to include web-based and printed marketing materials to students, faculty, staff, alumni and community members) to ensure all communications by the College are free of bias and articulate specifically ESF's commitment to diversity and inclusion.

<u>Strategy #6:</u> Have a clear and visible policy that allows College community members that ability to report anonymously diversity related concerns and suggestions for improvement

<u>Strategy #7</u>: Review and update policies and practices to meet the needs of transgender and/or transitioning students.

**Goal 2**: Ensure that the college commitment to diversity and inclusion is apparent and embedded at all levels of the institution.

Strategy #1: Appoint a permanent Chief Diversity Officer by August 2017 with clearly

articulated responsibilities and organizational relationships to support the implementation of the College's Inclusion, Diversity & Equity Strategic Plan <u>Strategy #2:</u> Create and maintain a Committee on Inclusion, Diversity and Equity with consistent faculty, staff and student representatives <u>Strategy #3:</u> Create transparent funding for institutional initiatives related to Inclusion, Diversity and Equity work and corresponding Institutional Research <u>Strategy #4:</u> Increase visibility of inclusion, diversity and equity mission and vision and its relationship to the College's overall mission and vision

**Goal 3**: All members of the community will engage in curricular, co-curricular and research activities that improve inclusion, equity and cultural competency within the college and from local, national and global partnerships.

<u>Strategy #1</u>: Require and financially support professional development opportunities to improve classroom inclusion to support respectful dialogue among those with various perspectives and viewpoints
 <u>Strategy #2</u>: Develop programming, discussion opportunities and training that engages the community in cross-cultural conversations and experiences
 <u>Strategy #3</u>: Create incentives to include a focus of inclusion, diversity, equity and cultural competency as a component of disciplinary research.
 <u>Strategy #4</u>: Expand the applied learning opportunities for students to include experiences in both urban and rural environmental settings; for example, community garden initiatives in the Syracuse Southside and greater Syracuse city area.

**Goal 4**: Improve recruitment and retention of student, faculty, staff and administrative ranks to be more reflective of NY State Census.

<u>Strategy #1:</u> Review search process, policies and procedures to assist search committees in assessing cultural competence of applicants. <u>Strategy #2:</u> Enhance the faculty and staff recruitment process to ensure that it demonstrates a commitment to diversity and to the development of diverse search pools. <u>Strategy #3</u>: Develop consistent 3-5 year institutional targets for student, faculty, staff and administrative representation with bi-annual reviews. Examples of such categories may include ethnicity, gender and international recruitment, enrollment and hiring. <u>Strategy #4:</u> Maintain current first-year student gender distribution and improve for incoming transfer students, graduate students, faculty and staff.

<u>Strategy #5</u>: Engage with existing dual career networks to assist partners of newly hired faculty and senior administrators

<u>Strategy #6:</u> Create, enhance and financially support opportunities and programs that promote success and retention of underrepresented undergraduate and graduate students.

<u>Strategy #7:</u> Establish and financially support first semester transition programs for transfer students, international students and non-traditional students <u>Strategy #8:</u> Review and enhance communication about the undergraduate and graduate admissions process to the College community.

<u>Strategy #9:</u> Establish and maintain partnerships with school districts and community based organizations within and outside of New York to expose students to STEM disciplines and assist in institutional enrollment goals.

<u>Strategy #10:</u> Create and allow access to class schedule for incoming undergraduate students (first-year and transfer students) two to three weeks prior to the upcoming semester to enable students to plan for other responsibilities and obtain necessary services in a timely manner.

<u>Strategy #11:</u> Create more inclusive supports for faculty, staff and students to be respectful for family care responsibilities.

**Goal 5**: Ensure understanding by the College community of policies and promoting access to the campus and to services for all community members.

<u>Strategy #1</u>: Review and revise policies and facilities to ensure broader applicability and accessibility for and to support diverse populations and people of varying abilities. For example, create a direct sidewalk path with ramps that connects all main campus facilities and parking locations.

<u>Strategy #2:</u> Create technological infrastructures and support that promote and ensure success for all community members

<u>Strategy #3:</u> Create supports for instructional design and an adaptive technology to assist the college in implementing such changes.

<u>Strategy #4:</u> Develop and deliver seminars to inform faculty and staff of requirements to implement accommodations for students with disabilities and provide information that articulates the supports that are available for students and faculty.

<u>Strategy #5:</u> Maintain and promote the procedure for students to self-advocate any challenges they may face in implementing required accommodations on campus.

**Goal 6**: Increase alumni engagement to improve inclusion, equity and cultural competency within the College community.

<u>Strategy #1:</u> Engage with alumni to develop mentorship opportunities for underrepresented students/faculty/staff/administrators.

<u>Strategy #2:</u> Engage with alumni to develop mentorship opportunities for women at ESF (students/faculty/staff/administrators).

<u>Strategy #3:</u> Highlight successful underrepresented alumni in STEM related positions using College communication outlets (alumni newsletter, social media, etc.) to increase overall visibility of the College and of careers being practiced by our alumni. <u>Strategy #4:</u> Engage alumni and provide opportunities with respective student groups within the Undergraduate Student Association, Graduate Student Association and the Student Diversity Advisory Council to provide mentorship and academic/career support.

**Goal 7**: Ensure the success of international students from Admission through graduation with appropriate resources to support their academic goals and extracurricular goals and to enrich the overall cultural competence of the college as a whole.

<u>Strategy #1</u>: Create a campus-wide committee that oversees the experience of both undergraduate and graduate international students.

<u>Strategy #2</u>: Expand the pre-orientation program for international students to include the completion of the English Language Assessment (ELA) exam and deliver a course that would meet the needs of the recommended actions provided by the ELA while also creating an orientation fee to support the program.

<u>Strategy #3</u>: Require that the ELA exam be completed by all international students and that the recommendations given from the ELA exam are acted upon

<u>Strategy #4</u>: Provide sufficient staff and support in the ESF Writing Center with Teaching English as a Second Language (TESL) knowledge with specific focus on Mandarin speakers to support ESF's partnership with the Beijing University of Chemical Technology.

## III. Accountability and Assessment

To measure the progress of the 2016-17 Diversity and Inclusion Strategic Plan, the College Inclusion, Diversity and Equity Committee will review the articulated plan on annual basis at the beginning of each academic year to measure progress on all related fronts regarding the Goals and Strategies of the plan.

Review of institutional data including enrollment, recruitment and retention trends for students, faculty and staff, campus climate surveys, Title IX reports, and others are critical for the Inclusion, Diversity & Equity Committee's work to review the progress of the Diversity & Inclusion Strategic Plan. What is most paramount is the College community being able to see itself in the plan to truly create a community that celebrates and embraces the spirit of the work. In addition, much has been done in the past:

- Women's Caucus initiatives
- Student feedback
- Climate surveys

With the leadership of a full-time Chief Diversity Office and the College Inclusion, Diversity and Equity Committee, these ideas can truly come to fruition and have also been critical components to the development of the College Inclusion, Diversity and Equity Committee's current strategic plan.

## IV. Concluding Statement

The development and implementation of this Diversity Strategic Plan at SUNY-ESF will be of the utmost important in supporting the mission of the College. In recognizing the dramatic demographic shifts the increased need for developmental education, the need for the incorporation of culturally responsive pedagogy, and the necessity of providing support services to enhance the success for our students is critical for the success of the institution. The College Inclusion, Diversity & Equity Committee believes the strategies outlined in this strategic plan will assist ESF in becoming ever more responsive to our ever changing world both via a robust curricular and co-curricular experience for our College community.

#### V. Appendices

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#### Appendix B – Institutional Data



Faculty Contracts: Footnotes declare what rank are included in contract type









Undergraduate Enrollment: Percentage of total enrollment for men and women





Graduate Enrollment: Percentage of total enrollment for men and women





Degrees Granted: Number of completions and percentage of total degrees conferred



## **APPENDIX C**

Progress Report to the Middle states Commission on Higher Education From SUNY-ESF Syracuse, NY 13210

Quentin D. Wheeler, President

10/1/2016

Subject of the Progress Report:

"To request a progress report, due October 1, 2016, documenting further development and implementation of a cohesive, organized and sustained assessment process that provides sufficient, convincing evidence that students are achieving key institutional and program learning outcomes, in all programs including general education, and that assessment information is used to improve teaching and learning (Standards 12 and 14)."

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#### Introduction

This progress report has been prepared at the request of the Middle States Commission on Higher Education (MSCHE) in response to a Monitoring Report submitted in March, 2015. The specific request is for a progress report:

... documenting further development and implementation of a comprehensive, organized and sustained assessment process that provides sufficient, convincing evidence that students are achieving key institutional and program learning outcomes, in all programs including general education, and that assessment information is used to improve teaching and learning (Standards 12 and 14).

This report addresses the requested information by examining the progress and current status of assessment efforts for General Education (Standard 12) and program student learning outcomes (Standard 14) separately. First, this report establishes context for the organization, sustainability, results, and actions of our comprehensive assessment process. Discussion of how assessment, information is analyzed and used to improve teaching and learning for both Standard 12 and Standard 14 follows the Institutional Context. Both Standard 12 and Standard 14 begin with a summary of how we have organized the assessment process at ESF, followed by evidence of how that process has been sustained through faculty engagement with the assessment process, and finally each standard concludes with examples of results of the most recent assessment process and the actions faculty are taking to refine our assessment practices as well as to improve student achievement of institutional and program learning objectives. Following the discussion of Assessment of Student Learning (Standard 14) we offer a connection between our program review process and our student learning assessment process at the program level. Concluding remarks are at the end to reinforce the comprehensive and sustained nature of our institutional assessment of student learning.

#### **Institutional Context**

The State University of New York College of Environmental Science (ESF or the College) is one of the 64 institutions in the State University of New York (SUNY) system. It was created by an act of the New York State legislature in 1911 as the New York State College of Forestry at Syracuse University. In 1972 the name was changed to its current title.

ESF has made a commitment to further development and implementation of an organized and sustained process for the assessment of student learning, including the hire of a Senior Staff Assistant for Assessment and Institutional Research. This doctoral level professional staff member is responsible for supporting all assessment efforts at ESF, including faculty assessment efforts, coordinating assessment of student learning at an institutional level, and assisting academic departments with the ongoing improvement of their assessment processes as requested. As an administrative team member, this individual serves as a point of contact within the

institution to ensure that the data available for review of academic assessment at the institutional level is available, organized, and robust.

The Senior Staff Assistant works with faculty to shape and organize assessment processes with both departmental needs and institutional needs in mind. Improvement of how we assess student learning is ongoing. Faculty at ESF continue to make sustained improvements to both their assessment methods as well as "closing the loop" by making changes to courses for the improvement of teaching and learning based on feedback gleaned from assessments at the course and department levels.

ESF is a Carnegie R3: Doctoral Universities – Moderate Research Activity. Other Carnegie descriptors include STEM dominant, high undergraduate, primarily residential, and higher transfer-in.

## **Progress to Date and Current Status**

#### **Standard 12: General Education**

#### The MSCHE Request for Information on General Education Assessment

MSCHE requests that ESF document... further development and implementation of a comprehensive, organized, and sustained assessment process that provides sufficient, convincing evidence that students are achieving key institutional and program learning outcomes, including... general education, and that assessment information is used to improve teaching and learning.

#### **Organization of Procedure**

The General Education Task Force was formed in Fall 2015 to examine and refine the structure and assessment process of the General Education process at ESF. As indicated in the introduction, conversations among faculty, the Associate Provost for Instruction and Dean of the Graduate School, and the Senior Staff Assistant for Assessment and Institutional Research acknowledged assumptions associated with the phrase "General Education," so we made the decision to organize our assessment of general education outcomes as the "College-wide Student Learning Outcomes & Assessment Committee" (CwSLOAC). The Senior Staff Assistant for Assessment and Institutional Research has also worked with this committee to organize and document the ongoing assessment of college-wide student learning outcomes, and to provide some additional tools to shape the comprehensive nature of student learning outcomes assessment.

For this analysis cycle, the Associate Provost for Instruction and Dean of the Graduate School forwarded a request for data in May 2016, in order for the CwSLOAC to assess student achievement of the College-wide Student Learning Outcomes. This request for data was sent to department chairs and assessment coordinators in each department. The College-wide SLOs we were reviewed for the 2015-16 academic year included Scientific Reasoning (SLO 1) and Quantitative Reasoning (SLO 2) as part of the regular assessment schedule. Additionally, two years of data for Critical Thinking (SLO 6) were assessed this year, as the assessment had not been completed in the 2014-15 academic year as scheduled.

Sampling was organized such that instructors were asked to select a representative or random sample of final work products from courses identified as data sources for the CwSLOs being assessed this year. If final enrollment in the course generated fewer than twenty projects (through individual or group work) the instructor was asked to submit all final work products for the class. As our assessment of institutional learning outcomes is still being refined, the data collection for Scientific Reasoning (SLO 1) did not return sufficient data for analysis. This is being addressed through both the committee's work to improving the organization of the request for data (see

Table 1) as well as an institutional commitment to supporting a comprehensive assessment of these learning outcomes.

Table 1: Timeline for Future Assessment			
March, April, May, & September	Requests for student work will be made to faculty. A request		
of each academic year	for AY 2015-16 is in progress.		
October 1	Data from previous academic year is due annually		
November	Rubrics are applied and data collected from submitted		
	student work samples		
January	Draft report written and submitted to faculty for review and		
	comment		
March	Report is finalized by the committee and released to faculty		
May	Report is endorsed by Academic Governance		

For long range planning of assessment activities, both to ensure that efforts are organized and sustained, the committee developed an assessment cycle that ensures all six outcomes are reviewed regularly (Table 2). We were intentional about structuring this schedule in a manner that allows enough flexibility to refine the CwSLO assessment process.

Table 2: College-wide Student Learning Outcome Assessment Schedule				
2015-16	Outcomes 1, 2, $6^1$	Progress Report Only – No synthesis expected	Assessing 2014-15 Data	
2016-17	Outcomes $3,4,5,1^2$	Synthesis Report – Comprehensive look at all 6 CwSLOs with 2 years of data and any previous synthesis reports.	Assessing 2015-16 Data	
2017-18	Outcomes 1, 2, 6	Progress Report Only – No synthesis expected	Assessing 2016-17 Data	
2018-19	Outcomes 3, 4, 5	Synthesis Report – Comprehensive look at all 6 CwSLOs with 2 years of data and analyzing changes triggered by previous synthesis report.	Assessing 2017-18 Data	

<sup>1</sup>- We conducted 2 years of assessment on SLO 6 (Critical Thinking) because it had not been effectively assessed previously.

 $^{2}$  – There was insufficient student work to review that addressed this outcome in the previous year; therefore, it will be assessed this year under the revised data collection protocol.

By necessity, the CwSLOAC has worked hard to establish an organized and comprehensive assessment procedure for reviewing College-wide Student Learning Outcomes. We recognize that without a high level of organization, the assessment of these important outcomes cannot be comprehensive or sustainable. As Table 1 and Table 2 show, we have invested a great deal of effort into establishing a schedule and procedure for conducting these assessments, which will promote the sustainability of our ongoing assessment of College-wide Student Learning Outcomes. In furtherance of this goal, the college has formed a College-wide Student Learning

Outcomes Assessment Committee (CwSLOAC), which is charged with overseeing the continuation of the assessment plan developed in 2014. In addition, this committee has also distributed a brief questionnaire to all academic departments that provided an opportunity for faculty to engage with the CwSLOs in a meaningful way, and reflect upon opportunities to refine the delivery and assessment of these learning outcomes for their individual departments.

#### Sustainability of CwSLO Assessment Process

Going forward from this inaugural cycle of College-wide Student Learning Outcomes assessment, coordination with academic departments will improve the sustainability of the assessment process. This will improve data collection procedures as well as the representativeness of the data. The process will also be sustained through the collaborative development of appropriate metrics to assess institutional learning outcomes. Departments will also participate in identifying additional opportunities to collect data relevant to the College-wide Student Learning Outcomes for each assessment cycle. The CwSLOAC will continue to meet regularly to coordinate the sustained assessment of student achievement of institutional learning outcomes. The Committee will continue to encourage departments to embrace how these overarching institutional learning outcomes clarify the competencies common to all academic programs at the College. To support this collaboration with academic departments, the Committee drafted a survey that was discussed at department meetings in September 2016 to solicit feedback from faculty about any changes they made to their curriculum based on the 2014-15 General Education report, and to invite them to offer suggestions for improving the data collection associated with CwSLO assessment.

#### **Results and Actions Related to CwSLO Assessment**

For Quantitative Reasoning (SLO 2), the committee was able to generate sufficient data for analysis, but also realized a need to refine the process and organization of data collection for this outcome as well, due to challenges regarding diversity of data sources, departmental representation, and variety of student experiences to demonstrate mastery of this outcome. Figure 1 represents the entire dataset, including data collected for introductory mathematics courses on campus. However, the committee believes Figure 2 is a more accurate representation of students' Quantitative Reasoning competencies upon graduation as it represents only data collected from a senior engineering student capstone assignment. The CwSLOAC will move to a model where SLOs are assessed at different levels, to improve the understanding of how and to what degree students are achieving competency in these skills.





Critical Thinking (SLO 6) provided two years of data for analysis. Similar to the analysis of SLO 2, the committee identified concerns over representativeness in SLO 6 as well. Two years of data were collected primarily from first year writing courses. As with the other CwSLOs, the committee determined that it will be valuable to identify additional data sources to assess this outcome. Figure 3 depicts the degree to which first-year students have achieved critical thinking skills, as they were defined for Academic Years 2014-15 and 2015-16.

Figure 3: Student Learning Outcome #6: Critical Thinking



Critical thinking skills were divided into four subcategories (6a - 6d) and analyzed for degree of attainment on a scale of 1 = not meeting to 4 = exceeding. Through this data analysis process, the Committee developed a table that establishes the competency level that should be identifiable in various courses at the College for the three SLOs that were under review for the 2015-16 Academic Year (Table 3).

## Figure 2: Student Learning Outcome #2: Quantitative Reasoning

Table 3: Refinement of data to be collected to address SLO competency levels				
Scientific Reasoning (SLO 1)				
Objective	Examples of Student Work	Competency		
1a	General Chemistry & General Biology Exam Questions	Introductory		
1b	General Chemistry & General Biology Lab Reports	Introductory		
1c	General Chemistry I embedded final exam question, Capstone	Emphasis		
1d	General Chemistry II media analysis project, Capstone	Emphasis		
1e	Capstone Projects	Emphasis		
Quantitative Re	easoning (SLO 2)			
2a	APM Courses	Introductory		
2b	APM Courses	Introductory		
2c	APM Courses	Introductory		
2d	Capstone	Emphasis		
Critical Thinking (SLO 6)				
6a	Capstone	Emphasis		
6b	Capstone	Emphasis		
6с	Capstone	Emphasis		
6d	Capstone	Emphasis		

By separating each SLO into competency levels, the Committee is able to collect and analyze data from a greater variety of courses and show a broader representation of student achievement of these competencies. The action of establishing "Introductory" and "Emphasis" levels of achievement for the College-wide Student Learning Outcomes also increases the types and number of courses that may be data sources for future CwSLO assessment cycles. For example, the scientific method is likely most evident at the introductory level, thus evidence of a higher scientific reasoning competency will be expected in more advanced coursework. The competency levels the CwSLOAC developed can be reviewed in Appendix A, "College-wide Student Learning Outcomes Assessment: Academic Year 2015/2016," which is being presented to the faculty for acceptance at the Academic Governance meeting on October 18, 2016.

The committee has acknowledged persistent concerns about representativeness of data and identified a variety of data sources in order to generate a more robust dataset for future analysis of the College-wide Student Learning Outcomes. The committee plans to create a five year assessment plan to further organize assessment efforts, and to effectively communicate the role and importance of the college-wide student learning outcomes to the campus. The Senior Staff Assistant for Assessment has drafted a course-to-outcomes matrix (Appendix B) which will allow the committee and faculty members to identify opportunities for data collection to sustain the assessment of CwSLOs. By identifying the courses where these competencies are introduced and emphasized, academic departments will have a clearer understanding of their role in providing direct instruction in one or more of the institutional learning outcome areas. Additional actions include:

- Working through all six of the outcomes to look for redundancy, and understanding and refining where we are getting the data
- Collaborately design how to map and keep the levels (introductory to mastery) organized
- Curriculum map of SLOs with courses using both catalog descriptions and syllabus mapping to make data collection easier
- Host a college-wide workshop on CwSLOs to make this an institutional priority, thus creating institutional memory around SLO assessment and data collection
- Create a better understanding across campus about what it means to graduate from ESF, and what the basic set of competencies every ESF student should have, are
- Using materials outside of program requirements, such as co-curricular activities (community service, international experiences, etc.)
- Utilize the program-specific assessment that is already being performed to be more efficient in CwSLO assessment

Engaging in these activities throughout the 2016-17 academic year will serve to address concerns the Committee has identified throughout the past two years of assessing college-wide competencies. Through these recommendations it will be possible to refine the process of assessment, as well as improve student achievement of these important competencies.

## Standard 14: Assessment of Student Learning

#### The MSCHE Request for Information on Student Learning Assessment

MSCHE requests that ESF document ... further development and implementation of a comprehensive, organized, and sustained assessment process that provides sufficient, convincing evidence that students are achieving key institutional & program learning outcomes ... and that assessment information is used to improve teaching and learning.

#### **Organization of Procedure for Assessment of Student Learning**

All BS programs at ESF have current assessment plans and are on a schedule for a cyclical analysis of assessment data in the future. By December 2015, all BS level programs at the College had completed at least one cycle of assessment and the subsequent analysis of those results have steered programmatic and/or assessment procedure changes. Table 4 provides a summary of programs, most recent assessment result date, most recent action date, and next scheduled analysis in the assessment cycle.

Table 4: Summary of Program Assessment Cycle					
Program	Most Recent	Most Recent Action	External	Next Scheduled	
	Result Date	Date	Accreditor?	Analysis Year	
Chemistry	09/15/2016	19/15/2016	No	2019	
Aquatics & Fisheries	09/09/2016	09/09/2016	No	2019	
Biotechnology	09/09/2016	09/12/2016	No	2019	
Conservation	09/12/2016	09/12/2016	No	2019	
Biology					
Environmental	09/12/2016	09/12/2016	No	2019	
Biology					
Forest Health	09/13/2016	09/13/2016	No	2019	
Natural History &	09/13/2016	09/13/2016	No	2019	
Interpretation					
Wildlife Science	09/13/2016	09/13/2016	No	2019	
Environmental	02/26/2015	02/26/2015	No	2019	
Science					
Environmental	New	/ Program	Yes	2019	
Health					
Environmental	07/01/216	07/01/2016	Yes	2019	
Resources					
Engineering					
Environmental	06/20/2016	06/20/2016	No	2019	
Studies					
Forest Ecosystem	02/05/2015	02/05/2015	Yes	2025	
Science					
	1				

Program	Most Recent	Most Recent Action	External	Next Scheduled
-	Result Date	Date	Accreditor?	Assessment
				Analysis Year
Forest Resources	02/05/2015	02/05/2015	Yes	2025
Management				
Natural Resources	02/05/2015	02/05/2015	Yes	2024
Management				
Sustainable Energy	New	/ Program	No	2025
Management				
Landscape	06/01/2015	06/01/2015	Yes	2017
Architecture				
Bioprocess	09/02/2016	09/02/2016	Yes	2018
Engineering				
Paper Engineering	05/08/2014	11/21/2012	Yes	2017
Paper Science	02/13/2015	11/26/2012	No	2018
Construction	05/30/2015	02/11/2015	No	2018
Management				

The following figures (Figure 5 – Figure 9) illustrate examples of how academic programs are engaging with the assessment process through capturing information through the institutional TracDat portal. The Senior Staff Assistant for Assessment has coordinated with faculty to add the results and actions related to their assessment cycles (ending in 2012 and/or 2015) to the TracDat system so they can be viewed, understood, and discussed uniformly at various levels of the institution. However, there has also been effort on the part of the Senior Staff Assistant for Assessment to respect how assessment procedures are organized within individual departments, so faculty engage with their departmental assessment process in a meaningful, sustainable, and comprehensive manner. Actions are not required when established targets are met. However, some programs have chosen to identify actions that will improve their assessment cycle.

#### **Sustainability of Assessment Process**

ESF has sustained an established schedule for assessment, and academic programs have continued to improve their assessment methods within the framework of institutional policies and procedures. Some academic programs are accredited by an outside agency (ABET, SAF, and LAAB) and have established assessment cycles that have been in place in accordance with the discipline specific accrediting bodies and are therefore well organized and sustained. Those programs without discipline-specific accreditation, however, are also fully engaged with the work of assessment and have been using the results and actions from prior review years to inform teaching and learning for the subsequent assessment cycles.

#### **Results and Actions Related to Assessment of Student Learning**

Overall, an important result of the student learning assessment process at ESF is the evolution and refinement of the assessment methods academic departments are using to improve teaching and learning. Most programs have continued to use the process of documenting and analyzing assessment data to identify appropriate data sources, and many have been able to make important improvements to support student achievement of identified learning outcomes. Figure 5 is an example of how the assessment plan for Environmental Biology evolved over the course of the assessment cycle.

#### Figure 5: Assessment: Program Four Column: Program (EFB) – Environmental Biology BS

Program Learning Outcomes	Measurement Scale	Results	Actions
	Target: 80% of students will meet or exceed expectations (>=73) Notes: Averaged overall performance of ENB students in two chemistry laboratory courses, FCH151, FCH153, as measured by final grade distribution. Rubric: Rubric attached in Related Docs	Target Met: Evaluation - Met Target Exceeds Standard: 41% Meets Standard: 45% Approaches Standard: 7% Does Not Meet Standard: 7% (01/31/2013)	(03/05/2014) Follow-Up: Identify upper-division courses within the ENB curriculum where principles are chemistry are applied in order to measure this outcome. Will incorporate into future assessment the exam scores from the required Cell Biology (EFB 325) course to measure student understanding of biochemistry. (09/12/2016)
Knowledge of Biology 09-12 - Demonstrate basic knowledge of biology at molecular, cellular, and organismal levels and apply it to interpreting issues in their profession and in daily life. Outcome Status: Completed Action Year{s}: 2009-2010, 2010- 2011, 2011 - 2012	Final Evaluation of PLO	Reporting Period: 2014 - 2015 Target Met: No Evaluation - Data Point Exam and quiz grades from EFB 101-104, EFB 307, and EFB 320 will be used rather than final grades in order to isolate student command of biological content from other student learning objectives of these courses. We will also utilize exam and quiz grades from the Form/Function directed elective courses, which focus on organismal, cellular, and molecular biology. (09/12/2016)	
	Course Grade - 0-100 Target: 80% of students will meet or exceed expectations (>=73). Notes: Average grades in General Biology courses. Rubric: Rubric attached in Related Docs	Reporting Period: 2011 - 2012 Target Met: Evaluation - Did Not Meet Target Exceeds Standard: 24% Meets Standard: 46% Approaches Standard: 27% Does Not Meet Standard: 3% (03/04/2013)	Action: Shift to assessing this outcome using General Biology lecture and laboratory examination grades (instead of final grades, which include other components), to track student performance. (09/12/2016)
			Follow-Up: Assessment of this outcome through lecture/laboratory exam grades will provide a baseline for any future capstone/synthesis course for the Environmental Biology major. (09/12/2016)
	Course Grade - 0-100 Target: 80% of students will meet or exceed expectations (>=73). Notes: Average grades for Genetics	Reporting Period: 2011 - 2012 Target Met: Evaluation - Met Target Exceeds Standard: 43% Meets Standard: 43%	Action: No actions needed. (03/20/2014) Follow-Up: The final grades for
09/12/2016	Generated	by TracDat <sup>®</sup> a product of Nuventive	Page 4 of 7

Figure 6 demonstrates evidence of using the assessment process to analyze how material is presented to students and in what ways classroom instructors could adjust their teaching approach to facilitate student achievement of program learning outcomes.

#### Assessment: Program Four Column

#### Program (CHEM) - Chemistry BS

Program Learning Outcomes	Measurement Scale	Results	Actions
Fundamental Chemistry Principles 13-14 - A sound understanding of the fundamental Chemical principles and underlying theories in the core areas of chemistry (analytical, organic, inorganic, physical) with an emphasis on critical thinking and problem- solving. Outcome Status: Completed Action Year(5): 2013 - 2014 Start Date: 05/25/2010	Exam/Quiz - In Course - >85% - Exceeding Expectations 66% - 85% - Meeting Expectations 51% - 65% - Approaching Expectations <50% - Not Meeting Expectations Target: 50% of students meet or exceed expectations Notes: Midterm I & II (FCH 360, 361) Rubric: No rubric used	Reporting Period: 2013 - 2014 Target Met: Evaluation - Did Not Meet Target 46% of students met target for Thermodynamics and Kinetics of Ideal Gases (09/15/2016)	Action: Student difficulty in adjusting to expectations of a physical chemistry course. Numerous steps in physical chemistry exam questions may be "chunked" into fewer pieces, so students need to be able to "chunk" these problems in order to minimize errors in individual steps and monitor overall logic of answers. Instructor will make use of quizzes (not counting toward grade) that will provide students with feedback on their ability to do "plug and chug" problems. (09/15/2016) Follow-Up: Assessing SLO's based on performance in selected problems on final exams may be more valid than assessment based on performance on midterms. Revision of the assessment program should be considered. (09/15/2016)
		Reporting Period: 2013 - 2014 Target Met: Evaluation - Did Not Meet Target 39% of students met the target for Chemical and Phase Equilibria (09/15/2016)	Action: Student difficulty in adjusting to expectations of a physical chemistry course. Numerous steps in physical
09/26/2016	Generated	by TracDat <sup>®</sup> a product of Nuventive	Page 1 of 13

Program Learning Outcomes	Measurement Scale	Results	Actions
			chemistry exam questions may be "chunked" into fewer pieces, so students need to be able to "chunk" these problems in order to minimize errors in individual steps and monitor overall logic of answers. Instructor will make use of quizzes (not counting toward grade) that will provide students with feedback on their ability to do "plug and chug" problems. (09/15/2016)
			Follow-Up: Assessing SLO's based on performance in selected problems on final exams may be more valid than assessment based on performance on midterms. Revision of the assessment program should be considered. (09/15/2016)
		Reporting Period: 2013 - 2014 Target Met: Evaluation - Met Target 72% of students met target for Kinetics (09/15/2016)	
		Reporting Period: 2013 - 2014 Target Met: Evaluation - Met Target 50% of students met Target for Fundamentals of Quantum Mechanics (09/15/2016)	
	Lab Project - >85% - Exceeding Expectations 75% - 85% - Meeting Expectations 61% - 74% - Approaching Expectations	Reporting Period: 2013 - 2014 Target Met: Evaluation - Did Not Meet Target 45% of students met target for Acid/Base/Other Titrations (09/15/2016)	
	<60% - Not Meeting Expectations Target: 70% of students will meet or exceed expectations. Notes: Acid/Base/Other Titrations Bubric: No rubric used		
	Lab Project - >85% - Exceeding	Reporting Period: 2013 - 2014	
09/26/2016	Generated	by TracDat" a product of Nuventive	Page 2 of 13

Figure 7 illustrates how the Bioprocess Engineering program refines their assessment plan from year to year, in response to student achievement of learning outcomes, in order to assess their targets most effectively. This reporting tool allows programs to examine and refine their assessment plans, and to track changes to their assessment methods.

#### Figure 7: Bioprocess Engineering Assessment Planning Report

Bioprocess Engineering Assessment Planning Report MSCHE Assessment Plan Format					
Program Learning Outcome Name	Program Learning Outcome	Outcome Year(s)	Assessment Method	Measurement Scale	Target
ABET - a. Knowledge 11-12	An ability to apply knowledge of mathematics, science, and engineering	2011 - 2012	Exam/Quiz - In Course	An exam is given at the first day of class in PSE 370 (Mass and energy balances) that covers general chemistry, physics, and calculus for the PSE 370 course. The exam should help students identify their deficiencies and prepare them for the upcoming assignments in the course.	We expect that 80% of the students will score 75% or above on the exam. We expect all students to score 60% or above.
		2011 - 2012	Final Project	4 - Exceptional 3 - Acceptable 2 - Marginal 1 - Unaaceptable	80% of the stduents are at least at acceptable level (3).
		2011 - 2012	Lab Project	4 - Exemplary 3 - Proficient 2 - Apprentice 1 - Novice	At least 85% of the student work is at least at Proficient level (or 3).
		2011 - 2012	Presentation/Performance	4 - Exemplary 3 - Proficient 2 - Apprentice 1 - Novice	At least 85% of the student work is at least at Proficient level (or 3).
		2011 - 2012	Survey of Students	5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet	at least 80% of the students rated at least 4 or satisfied with the outcome requirements.
ABET - a. Knowledge 12-14	An ability to apply knowledge of mathematics, science, and engineering	2012 - 2013	Final Project	4 - Exceptional 3 - Acceptable 2 - Marginal 1 - Unaaceptable	80% of the stduents are at least at acceptable level (3).
		2012 - 2013	Lab Project	4 - Exemplary 3 - Proficient 2 - Apprentice 1 - Novice	At least 85% of the student work is at least at Proficient level (or 3).
		2012 - 2013	Presentation/Performance	4 - Exemplary 3 - Proficient 2 - Apprentice 1 - Novice	At least 85% of the student work is at least at Proficient level (or 3).
00/28/2018 1-10		2012 - 2013	Survey of Students	5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet	at least 80% of the students rated at least 4 or satisfied with the outcome requirements.
08/20/2010 1.10			Fage 10		
Program Learning Outcome Name	Program Learning Outcome	Outcome Year(s)	Assessment Method	Measurement Scale	Target
		2012 - 2013	Survey of Students	2 - Approaching to the outcome 1 - Did not meet	at least 80% of the students rated at least 4 or satisfied with the outcome requirements.
		2013 - 2014	Final Project	4 - Exceptional	80% of the stduents are at least at
				2 - Marginal 1 - Unaaceptable	acceptable level (3).
		2013 - 2014	Lab Project	2 - Marginable 2 - Marginable 4 - Exemplary 3 - Proficient 2 - Apprentice 1 - Novice	acceptable level (3). At least 85% of the student work is at least at Proficient level (or 3).
		2013 - 2014 2013 - 2014	Lab Project Presentation/Performance	2 - Atarginal 2 - Marginal 1 - Unaaceptable 4 - Exemplary 3 - Proficient 2 - Apprentice 1 - Novice 4 - Exemplary 3 - Proficient 2 - Apprentice 1 - Novice	acceptable level (3). At least 85% of the student work is at least at Proficient level (or 3). At least 85% of the student work is at least at Proficient level (or 3).
		2013 - 2014 2013 - 2014 2013 - 2014	Lab Project Presentation/Performance Survey of Students	2 - Atarginal 2 - Marginal 2 - Marginal 4 - Exemplary 3 - Proficient 2 - Apprentice 1 - Novice 4 - Exemplary 3 - Proficient 2 - Apprentice 5 - Proficient 5 - Exceptionally satisfied 4 - Satisfied 5 - Exceptionally satisfied 4 - Satisfied 5 - Minimaly meet 2 - Approaching to the outcome 1 - Did not meet	acceptable level (3). At least 85% of the student work is at least at Proficient level (or 3). At least 85% of the student work is at least at Proficient level (or 3). at least 80% of the students rated at least 4 or satisfied with the outcome requirements.
ABET - a. Knowledge 14-15	An ability to apply knowledge of mathematics, science, and engineering	2013 - 2014 2013 - 2014 2013 - 2014 2014 - 2015	Lab Project Presentation/Performance Survey of Students Final Project	2 - Ararginate 2 - Marginate 2 - Marginate 4 - Exemplary 3 - Proficient 2 - Apprentice 1 - Novice 4 - Exemplary 3 - Proficient 2 - Apprentice 1 - Novice 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Did not meet 4 - Exceptional 3 - Acceptable 2 - Marginal 1 - Unaaceptable	acceptable level (3). At least 85% of the student work is at least at Proficient level (or 3). At least 85% of the student work is at least 85% of the students rated at least 80% of the students rated at least 4 or satisfied with the outcome requirements. 80% of the stduents are at least at acceptable level (3).
ABET - a. Knowledge 14-15	An ability to apply knowledge of mathematics, science, and engineering	2013 - 2014 2013 - 2014 2013 - 2014 2014 - 2015 2014 - 2015	Lab Project Presentation/Performance Survey of Students Final Project Group Project	2 - Ararginate 2 - Marginate 2 - Marginate 4 - Exemplary 3 - Proficient 2 - Apprentice 1 - Novice 4 - Exemplary 3 - Proficient 2 - Apprentice 1 - Novice 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Approaching to the outcome 1 - Oid not meet 4 - Exceptional 5 - Acceptable 2 - Marginat 1 - Unaaceptable 4 - Exceptionat 2 - Proficient 3 - Proficient 3 - Proficient 3 - Proficient 3 - Apprentice 1 - Novice	acceptable level (3). At least 85% of the student work is at least at Proficient level (or 3). At least 85% of the student work is at least at Proficient level (or 3). at least 80% of the students rated at least 4 or statisfied with the outcome requirements. 80% of the stduents are at least at acceptable level (3). 3 - Proficient
ABET - a. Knowledge 14-15	An ability to apply knowledge of mathematics, science, and engineering	2013 - 2014 2013 - 2014 2013 - 2014 2014 - 2015 2014 - 2015 2014 - 2015	Lab Project Presentation/Performance Survey of Students Final Project Group Project Lab Project	2 - Marginal 2 - Marginal 2 - Marginal 2 - Marginal 4 - Exemplary 3 - Proficient 2 - Apprentice 1 - Novice 4 - Exemplary 3 - Proficient 2 - Apprentice 1 - Novice 5 - Exceptionally satisfied 4 - Satisfied 3 - Minimally meet 2 - Apprentice 1 - Did not meet 4 - Exceptional 3 - Acceptable 2 - Marginal 1 - Unaaceptable 4 - Exceptional 3 - Acceptable 2 - Marginal 1 - Unaaceptable 4 - Exceptional 3 - Proficient 2 - Apprentice 1 - Novice 4 - Excemplary 3 - Proficient 3 - Proficient 4 - Excemplary 3 - Proficient 3 - Proficient 4 - Excemplary 3 - Proficient 5 - Proficient 4 - Excemplary 3 - Proficient 5 - Proficient	acceptable level (3). At least 85% of the student work is at least at Proficient level (or 3). At least 85% of the student work is at least at Proficient level (or 3). at least 80% of the students rated at least 4 or satisfied with the outcome requirements. 80% of the stduents are at least at acceptable level (3). 3 - Proficient 3 - Proficient
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ABET - a. Knowledge 14-15	An ability to apply knowledge of mathematics, science, and engineering	2013 - 2014 2013 - 2014 2013 - 2014 2014 - 2015 2014 - 2015 2014 - 2015 2014 - 2015 2014 - 2015	Lab Project Presentation/Performance Survey of Students Final Project Group Project Lab Project Lab Project Survey of Students	2 - Ararginate 2 - Marginate 2 - Marginate 3 - Proficient 2 - Apprentice 1 - Novice 4 - Exemplary 3 - Proficient 2 - Apprentice 1 - Novice 4 - Exemplary 3 - Proficient 2 - Approaching to the outcome 3 - Minimally meet 4 - Satisfied 3 - Minimally meet 4 - Exceptional 5 - Exceptional 4 - Exceptional 5 - Acceptable 2 - Marginat 5 - Acceptable 2 - Marginat 5 - Proficient 2 - Apprentice 1 - Novice 4 - Exemplary 3 - Proficient 4 - Exemplary 4 - Exemplary 5 - Exemplar	acceptable level (3). At least 85% of the student work is at least at Proficient level (or 3). At least 85% of the student work is at least at Proficient level (or 3). at least 80% of the students rated outcome requirements. 80% of the students are at least at acceptable level (3). 3 - Proficient 3 - Proficient At least 85% of the student work is at least at Proficient level (or 3). At least 85% of the student work is at least at Proficient level (or 3). at least 80% of the student work is at least at Proficient level (or 3). at least 80% of the student srated outcome requirements.

Changes made by departmental faculty include selecting assessment measures, changes to instructional methods, and refining assessment procedures. This cyclical process has allowed faculty and departmental assessment coordinators to develop a deeper understanding of curricular needs and strategies for supporting student achievement of program learning outcomes. The four column report from the Conservation Biology program (Appendix C) provides a comprehensive example of how faculty addressed concerns relating to student attainment of program learning outcomes. In Figure 8 below, it is evident that despite having met the established target for student achievement, the Biotechnology department chose improve the process by working to select and identify other opportunities to measure this outcome that are more refined than course grades.

Figure 8: Assessment: Program Four Column: Program (EFB) – Biotechnology BS

## Assessment: Program Four Column

#### Program (EFB) - Biotechnology BS

Program Learning Outcomes	Measurement Scale	Results	Actions
Communication 09-12 - Communicate effectively, both orally and in writing, factual knowledge of biotechnology and results of research. Outcome Status: Completed Action Year(s): 2009-2010, 2010- 2011, 2011 - 2012 PLO Target Met?: 4 - Exceeded expectations	Course Grade - surpassing expectations - percent 87-100%; or grades B+, A-, A; or scores 4-5 meeting expectations - percent 73 - 86%; or grades C, C+, B-, B; or scores 3 to 3.9 approaching expectations - percent 60 - 72%; or grades D, C-; or scores 2 to 2.9 not meeting expectations - percent <60; or grade F; or scores 0-1.9 Target: 80% of students meet or exceed expectations Notes: combined the three types of measure because the program wold let me chnge between the three as needed. Rubric: Rubric attached in Related Docs How Assessed: Averaged final grades in EWP 190 and EWP 290	Reporting Period: 2014 - 2015         Target Met: Evaluation - Met Target         Method B         surpassing expectations       00%         meeting expectations       0         approaching expectations       0         not meeting expectations       0         Related Documents:       BTC assessment calculations         Reporting Period: 2014 - 2015       Target Met: Evaluation - Met Target         Method A       surpassing expectations 71%         meeting expectations 0       not meeting expectations 0         not meeting expectations 0       00/31/2010)         Related Documents:       BTC assessment calculations	Action: no action needed (01/09/2013) Follow-Up: Course grades are coarse measures of how students might be meeting the specific goals in relation to communication. Other measures are better opportunities for students to demonstrate their communication skills. (09/09/2016) Action: None needed (01/09/2013)
09/09/2016	Course Grade - 87 - 100% = B+, A-, A (surpassing expectations) 73 - 85% = C, C+, B-, B (meeting expectations) 60 - 72% = D, C- (approaching expectations) <60 = F (not meeting expectations) Target: 80% of students meet or Generated	by TracDat <sup>®</sup> a product of Nuventive	Page 1 of 9

Additionally, some programs just completed their first assessment cycle in 2015, so the Wildlife Science program realized that they needed to adjust their program learning outcomes at a broader level (Figure 9).

### Assessment: Program Four Column

Program Learning Outcomes	Measurement Scale	Results	Actions
Knowledge of Physical Science 09-12 - Demonstrate knowledge of physical science (chemistry, physics) and apply that knowledge to wildlife biology. Outcome Status: Completed Action Year[s]: 2009-2010, 2010- 2011, 2011 - 2012	Final Evaluation of PLO	Reporting Period: 2014 - 2015 Target Met: No Evaluation - Data Point This learning objective and it's assessment criteria are: 1. physical science courses are beyond the control of the faculty teaching major-specific courses 2. grade distribution in physical science courses do not directly assess the wildlife science major 3. this learning outcome is better addressed by wildlife specific courses through understanding species habitat needs, nutrition, etc. (09/13/2016)	Action: The team has recommended removal of this particular learning objective in combination with refinements made to later learning objectives to better assess student knowledge and abilities in this area. The habitat suitability lab will still be included in our assessment, but under a modified learning objective to "Explain wildlife habitat needs and assess habitat quality for wildlife by means of scientific surveys, statistics, and other quantitative mothods," which we consider a more suitable aspect for evaluation. (09/13/2016)
	Course Grade - >87% - Exceeds Standard 73% - 86% - Meets Standard 60% - 72% - Approaches Standard <60% - Does Not Meet Standard Target: 80% of students will meet or exceed expectations Rubric: No rubric used How Assessed: Final grade distribution for WS students in FCH 150-153, PHY 101, or EFB 200	Reporting Period: 2014 - 2015 Target Met: Evaluation - Met Target 88% of students met or exceeded expectations. (09/13/2016)	
		Reporting Period: 2014 - 2015 Target Met: Evaluation - Met Target 569 student grades evaluated 6 courses, 213 students. Mean grade 83% (SE 1.2). (12/13/2013)	
09/13/2016	Generated	by TracDat" a product of Nuventive	Page 1 of 8

Taken together, these figures illustrate the documentation of an organized, comprehensive, sustained assessment process at the College. As departmental assessment coordinators gain experience with the assessment of student learning, the assessment plans have evolved to reflect needed changes. This effort has allowed the Senior Staff Assistant to provide support to academic departments for the ongoing refinement of assessment measures that are appropriate to the learning outcomes for the program. Coordination of these discussions has begun and collaboration will ensure that the assessment of student learning continues to be a comprehensive, organized, and sustainable process that informs curricular decisions at the program level.

#### **Connection between Program Review and Assessment of Student Learning**

ESF has a long-standing procedure for program review that operates on a six-year review cycle for programs that are not accredited by a discipline-specific accreditor. Those programs that do hold discipline-specific accreditation are reviewed on the same cycle as their reaffirmation of accreditation. For programs that are reviewed on the institutional six-year cycle, the final year is

Table 5	Table 5: Summary of Program Review Schedules				
Dept.	Program	Accrediting Body/Reviewer	Next Rev. Yr.		
CHEM	Chemistry BS	Selected Peer Group	2018		
EFB	Aquatics and Fisheries Science BS	Selected Peer Group	2018		
EFB	Biotechnology BS	Selected Peer Group	2018		
EFB	Conservation Biology BS	Selected peer Group	2018		
EFB	Environmental Biology BS	Selected Beer Group	2018		
EFB	Forest Health BS	Selected Peer Group	2018		
EFB	Environmental Education &	Selected Peer Group	2018		
	Interpretation BS				
EFB	Wildlife Science BS	Selected peer Group	2018		
ENS	Environmental Science BS	Selected Peer Group	2016		
ENS	Environmental Health BS	Selected Peer Group	2019		
ERE	Environmental Resources	Accreditation Board for	2018		
	Engineering BS	Engineering and Technology			
ES	Environmental Studies BS	Selected Peer Group	2017		
FNRM	Forest Ecosystem Science BS	Society of American Foresters	2025		
FNRM	Forest Resources Management BS	Society of American Foresters	2024		
FNRM	Natural Resources Management BS	Society of American Foresters	2024		
FNRM	Sustainable Energy Management BS	Selected Peer Group	2025		
LA	Landscape Architecture BS	American Association of	2017		
		Landscape Architects			
PBE	Bioprocess Engineering BS	Accreditation Board for	2018		
		Engineering and Technology			
PBE	Paper Engineering BS	Accreditation Board for	2018		
		Engineering and Technology			

devoted to analysis of the previous years of data collection. Table 5 shows a summary of when each program is expected to produce a program review report in the future.

The institution uses TracDat software to maintain a database of assessment activities for each year of data collection, and subsequently report results, actions, and follow up activities during the final year. To support program review, as well as to develop an effective understanding of the assessment procedures academic departments are developing, the Senior Staff Assistant transfers assessment data from departmental reports to the TracDat system, in order to have a consistent and robust repository of assessment data to analyze at the institutional level.

#### Conclusions

#### **General Education (Standard 12)**

Through discussions across academic departments, SUNY ESF has established a set of six College-wide Learning Outcomes that reflect the basic competencies that each student should possess upon degree completion. For not only this reason, but also for the reason that SUNY has a specific set of system-wide General Education requirements that must be met within the first two-years of study, as part of the system's Seamless Transfer initiative, the College-wide Student Learning Outcomes & Assessment Committee chose to frame our institutional student learning outcomes in a more inclusive manner. By discussing these learning outcomes as "college-wide," it creates an opportunity for faculty, staff, and students to take ownership of these broad competencies, and assess them as an integral part of the SUNY ESF educational experience. Through this work, articulation and assessment of these outcomes has improved, and in future assessment cycles we hope to see greater faculty engagement with assessment of these general student learning outcomes than the College has enjoyed in the past.

The process of assessing SUNY ESF's College-wide Student Learning Outcomes has been the primary responsibility of the College-wide Student Learning Outcomes Assessment Committee. The Committee's engagement with a collaborative and cross-disciplinary assessment process has highlighted that in order to conduct meaningful assessment of these broad concepts, it is essential to understand where, and to what degree, they are introduced to students throughout their studies. For this reason, the Committee has distributed a course-to-outcome matrix (Appendix B) for the six SLOs we have identified as our institutional general education outcomes, and each department is to identify what outcomes are incorporated into which courses. Furthermore, the Committee has chosen to delineate whether the outcome is presented in an Introductory or Emphasis level, as the sub-outcomes in the College-wide Student Learning Outcomes & Assessment Committee annual report suggests (Appendix A). Through this cycle of engaging with the assessment work, analyzing the data generated for assessment, and making changes to the assessment process, SUNY ESF is on a clear and strong path to facilitating student achievement of our College-wide Student Learning Outcomes.

#### **Student Learning Assessment (Standard 14)**

Assessment of student learning at the programmatic level continues to develop and become more refined, but is not a new activity at ESF. The three-year cycle of assessment continues to go forward, but through the process of developing good assessment procedures within departments, has become staggered. We feel this is a good thing, as it demonstrates that departmental faculty are engaging with the work of assessment and taking the time to implement the curricular changes indicated by the analysis of assessment data. Each program has identified an assessment and review cycle that allows them to do their assessment work the most effectively, and to produce relevant and sustainable changes where necessary. With the addition of the Senior Staff Assistant for Assessment, data are being entered into TracDat in a consistent and robust manner, facilitating institutional analysis of program level assessment. Furthermore, this administrative

team member brings knowledge of assessment best practices, an understanding of the delicate balance between assessment method and assessment methodology, and a genuine desire to support student success through the development of proactive and meaningful assessment procedures to support the exceptional academic programs offered at ESF.

# **Appendix A: College-wide Student Learning Outcomes Assessment**



State University of New York College of Environmental Science and Forestry

# Academic Year 2015/2016

## College-wide Student Learning Outcomes Assessment Academic Year 2015-2016

Submitted for faculty endorsement on behalf of the committee by Kelley Donaghy, Chair of CwSLO Committee

Members of the College-wide Student Learning Outcomes (CwSLO) Committee

Chair: Kelley J. Donaghy, Associate Professor of Chemistry Nasri Abdel-Aziz, Instructor of Mathematics Shannon Farrell, Assistant Professor of Biology Sophie Gublo-Jantzen, Assessment and Institutional Research Associate Lindi Quackenbush, Associate Professor of Engineering Scott Shannon, Associate Provost of Instruction Kurt Stavenhagen, Writing Instructor, Interim Director of the Writing Program Mary Thompson, Instructor of Mathematics Sarah L. Vonhof, Instructor of Forest Resources Policy

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## College-wide Student Learning Outcomes Assessment Academic Year 2015-2016

## **Overview and Process**

A General Education Committee was formed in the fall of 2015 to focus on the assessment of the General Education Student Learning Outcomes. One of the first recommendations adopted by this committee was to assess the general education learning outcomes as College-wide Student Learning Outcomes due to our heavy reliance on neighboring Syracuse University, advanced placement and transfer courses for general education courses which could not be easily assessed. For clarity, we changed the name of the committee to College-wide Student Learning Outcomes (SLOs) are referring to Middles States student learning outcomes.

This report builds upon the Academic Year 2014/2015 report (Appendix I) and follows the protocol established in that report for review cycles. The SLO's and their accompanying rubrics used for the review of Academic Year 2013-2014 (AY1314) were applied to student work collected for Academic Year 2014-2015 (AY1415) for quantitative reasoning and scientific reasoning per last year's timeline of review cycles. Further, the critical thinking SLO was developed and an accompanying rubric generated (Appendix II). These outcomes and rubric were applied to student work collected for AY1314 and AY1415. The faculty on the committee as well as additional faculty were contracted to review the submitted student work and then the committee met to review and make recommendations based on the data, and ultimately generate a draft report. This draft report was presented to department chairs and subsequently to each department's faculty at a department meeting for review and the report finalized in September of 2016. It will be presented to Academic Governance for review, feedback and endorsement at the October 18<sup>th</sup> 2016, College-wide Academic Governance Meeting.

## **Student Learning Outcomes Reviewed This Year**

The timeline suggested from the 2014-2015 review for assessment required review of two SLOs each year, using one year of current data and student work each year. However, because the committee did not complete the critical thinking SLO assessment last year, they studied two years of data for this report.

#### Scientific Reasoning (SLO #1)

Students will be able to demonstrate understanding of modern science and the implications of scientific discoveries, apply the scientific method and use science to address contemporary problems.

#### Quantitative Reasoning (SLO #2)

Students will be able to describe, interpret, apply and evaluate quantitative information.

#### Critical Thinking (SLO #6)

Students will be able to interpret, analyze and integrate data with theory and evidence and to synthesize and apply knowledge to identify problems, propose solutions and make decisions.

## **Summary of Assessment of Student Work**

### Scientific Reasoning (SLO #1)

The work provided by the campus community was not sufficient for meaningful assessment of this SLO this cycle. There were several reasons the committee found it impossible to make meaningful assessment this cycle. First the materials collected lacked a specific call to use scientific method by design of the assignment, then there was an overall lack of responses to direct request for materials campus-wide resulting in a less than diverse sampling, finally, a dedicated committee charged with these tasks until late in the fall semester. Based on these identified problems, the committee has suggested several refinements to the assessment process both as to the kinds of materials for assessment to be collected based on learning outcomes as well as the timeline of the assessment process. For example: demonstrating understanding of the scientific method is really best addressed at the introductory course level. It becomes less obvious (and perhaps by design absent) in capstone documents and consequently more difficult for external reviewers to identify, therefore general chemistry and general biology will be targeted for this introductory type of learning outcome. Other sub-outcomes, such as making informed decisions on contemporary issues and the relationships between science and society, are better addressed by capstone projects. A similar process will be used in quantitative reasoning where introductory learning outcomes will be assessed in the math courses and advanced learning outcomes assessed using capstone assignments. These refinements are discussed further below in Assessment Process Refinements. This SLO will be re-assessed next year with Student Learning Outcomes #3, 4, and 5 using more targeted data.

## Quantitative Reasoning (SLO #2)

SUNY ESF is primarily a science based school, and we would expect that our students would be generally proficient in Quantitative Reasoning, so we hope to set high standards and continue to

strive towards improvements. **Table 1** shows the measured proficiency in the objectives of Quantitative Reasoning along with the expected proficiency:

Objective	Target threshold for	Measured to
	meeting or	be meeting or
	exceeding	exceeding
2a- Identify and describe quantitative information	80%	70%
2b- Interpret quantitative information and draw inferences	75%	65%
2c- Apply and analyze problems with acquired quantitative	70%	70%
reasoning and skills		
2d- Synthesize and evaluate problems within a specific	60%	60%
discipline using quantitative reasoning		

Table 1. Perc	entage of student	: meeting or e	exceeding for ea	ach SLO for	Quantitative	Reasoning
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Overall, this may appear to be a satisfactory indicator that we are somewhat reaching our goals for proficiency in Quantitative reasoning. However, the reality behind the numbers is that three-quarters of the data came from exams from the APM math classes, and the other one-quarter came from senior capstones and papers from engineering students. If you take that into consideration, then the results are not so surprising or exciting. We lacked a diverse sample of quantitative work from the rest of the college such as Environmental Studies, Landscape Architecture, and Environmental Forest Biology to truly assess the general quantitative reasoning proficiency for our students. Although most of these students are represented by the APM math courses, the goal is to assess their quantitative reasoning within their field. This is the essence of objective 2d. The results for 2d, in fact should be looked at exclusively with a student's culminating experience within their program of study. Figure 1, shown below summarizes the SLO evaluation for all documents reviewed.

Figure 1. All assessment Data for Quantitative Reasoning Student Learning Outcomes



If we were to exclude the APM data, then we would get more of a clearer picture as to whether Objective 2d is being fulfilled. **Figure 2** looks at only the culminating experiences of students, and the results are rather surprising and revealing. The students seem to either know how to quantitatively synthesize a problem or they do not. The middle area of approaching and meeting shrinks significantly.

Figure 2. Capstone Assessment Data for Quantitative Reasoning Student Learning Outcomes



Finally, we have to consider how the metrics were defined and applied. In capstones and other culminating experience, a 1 (Not Meeting) was assigned to students that either provided a graph without proper analysis or seemed to avoid opportunities to give quantitative analysis.

### Critical Thinking (SLO #6)

Critical Thinking is a key attribute of higher education and is valued highly among STEM majors. Therefore we would expect that SUNY ESF students would be meeting or exceeding at the 70% range for this SLO. **Table 2** shows the number of students meeting and exceeding by year.

Objective	Expected to be		Measured to be	
	meeting or exceeding		meeting or exceeding	
	AY1314	AY1415	AY1314	AY1415
6.a Locate, select, and interpret data or information using quantitative and qualitative analytical skills.	70%	70%	51%	43%
6.b Carefully analyze and integrate theory, data and evidence appropriate to discipline.	70%	70%	56%	38%
6.c Synthesize and apply knowledge to identify problems, propose solutions and make decisions.	70%	70%	66%	41%
6.d Communicate clearly with a target audience.	70%	70%	63%	38%

Table 2. Percentage of student meeting or exceeding for each SLO for Critical Thinking

Similar to the assessment of our goals for Quantitative Reasoning the work samples that were used lacked diversity and in some cases did not seem like good samples to use for this outcome. Much of the student samples reviewed came primarily from first year writing courses and the committee felt these are SLO's that continue to develop and get stronger as students progress throughout the SUNY ESF curriculum. Collection of student work is a primary focus going forward to ensure diversity, with a goal to collect capstone or synthesis projects from all programs and to focus review of the work on assignments that are intended to clearly have a critical thinking component. See the refinements to the data collection below in Assessment Process Refinement.



Figure 3: Assessment Data for Critical Thinking Student Learning Outcomes.

A rubric (Appendix II) was used to assess four areas of critical thinking: (a) locate, select, and interpret data or information using quantitative and qualitative analytical skills; (b) carefully analyze and integrate theory, data and evidence appropriate to discipline; (c) synthesize and apply knowledge to identify problems, propose solutions and make decisions; and (d) communicate clearly with a target audience.

Taken together, 43% of the projects assessed from the academic year (AY) 2014/2015 met or exceeded outcomes for the first area of critical thinking—locating, selecting and interpreting data or information using quantitative and qualitative analytical skills. This result was down from 51% for the same measurement for AY 2013/2014. This shows that in 57% of documents, students either failed to cite references or adequately discuss them; in 25% of the cases they did not cite sources, use authoritative references or adequately analyze them.

For the second area of critical thinking (carefully analyze and integrate theory, data and evidence appropriate to discipline), 38% of projects surveyed from AY 2014/2015 met or exceeded
the outcomes. Like the first area, the percentage that met or exceeded the standard again was down from 56% in AY 2013/2014. The rubric was scaled as the "careful analysis and integration of theory, data and evidence" (rated at 4) to no "integration or evaluation of information" (rated 1). In a majority of documents, students did not integrate and analyze source material to a full extent.

The third area of critical thinking (synthesize and apply knowledge to identify problems, propose solutions and make decisions) shows the most marked drop between AY 2013/2014 and AY 2014/2015: from 66% to 41%. Here an even split (35% each) occurred between students who are able to identify problems, at least one solution and justification for that solution adequately (35%) and those who either did not identify or understand a problem nor provide enough solutions and justification (35%).

The fourth area of critical thinking (communicate clearly with a target audience) also showed a disparity among those that met or exceeded the standard: down from 63% in AY 2013/2014 to 38% in AY 2014/2015. Here a clear strong thesis and lack of clear lines of reasoning were deemed generally substandard. For most (41%) arguments put forth, we found a lack of clarity and precision in the argument was at fault.

# **Communication of Results**

Committee Chair Donaghy communicated the results of the assessment to the Academic Department Chairs at the Provost's Academic Council Meeting in May. The Academic Department Chairs were asked to either facilitate a discussion with their faculty directly or to invite a member of the CWSLO Committee to a departmental meeting when the report would be discussed. Results of those discussions were recorded and a document was created to review and make adjustments to this report as well as to generate recommendations. This data was presented to the faculty at the September College-wide meeting of Academic Governance, the final report was presented for endorsement at the October College-wide meeting of Academic Governance.

# **Recommendations Based Upon Data Collected**

Based upon the data collected this past year, there are two specific recommendations to the process that the committee is making:

- 1. Data collection must be targeted, general calls for work do not result in a sufficient sample size for meaningful analysis.
- 2. SLO's at the introductory level can be assessed in one course while those SLO's that rank higher on Bloom's taxonomy can be assessed in higher level courses

### **Actions Taken**

In order to carry-out the first recommendation above, a survey was done of each academic department to help identify which courses in each program would be most suitable for the collection and assessment of student work for each of the SLO's. These surveys (5/7 departments reporting) show some changes in the coursework being required, the kinds of questions being asked on specific course assessments and a general acknowledgement that CwSLO's although formerly called general education are being embraced across the curriculums and used to refine our students basic set of competencies.

Further, to address point number two above, these surveys included questions about what courses in particular in each program would be best to target for student work collection for assessment at the introductory level as well as the advanced level. This will significantly increase the sample size as well as the ability to assess each outcome.

### **Assessment Process Refinements**

The committee identified significant problems with data collection and data analysis. Trying to assess all of the SLO's using materials collected from either upper-division capstone courses or lower division entry level courses such as General Chemistry, caught either the higher level SLOs or the lower level SLOs but one type of course materials is insufficient to address all levels of the expected competencies. Therefore the committee suggests that the SLOs have specific competency levels such as introductory (basic competency) and emphasis (higher level competency). For example, the scientific reasoning SLO has as its most basic level of competency, the introduction of the scientific method (1a. Demonstrate knowledge of the scientific method) which is very low on Bloom's Taxonomy and is best assessed within the entry-level general education courses. Conversely higher level competencies such as assess credibility and analyze and discuss are best assessed at the capstone level. Therefore Table 3 is an attempt at developing guidelines for specific student work for each of the objectives within the SLO's of scientific reasoning, quantitative analysis and critical thinking. This is a refinement to the prior process suggested by the committee and reflects a movement toward more specific data collection.

ex	expectations.				
Scientific Reasoning (SLO#1)					
Objective	Examples of Student Work				
1a	General Chemistry and General Biology Exam Questions				
1b	General Chemistry and General Biology Laboratory Reports				
1c	General Chemistry I embedded final exam question, Capstone projects				
1d	General Chemistry II media analysis project, Capstone Projects				
1e	Capstone projects				

**Table 3.** Refinement of data to be collected specifically to address SLO competency level expectations.

Quantitative	Quantitative Reasoning (SLO #2)			
Objective	Examples of Student Work			
2a	APM Courses			
2b	APM Courses			
2c	APM Courses			
2d	Capstone Project			
Critical Thinking				
Objective				
6a	Capstone Project			
6b	Capstone Project			
6c	Capstone Project			
6d	Capstone Project			

Another process refinement is reflected in our new timeline for assessment. In our original schedule we were to assess two SLOs each year, so that each SLO would be analyzed every three years. In a ten year period, this schedule would provide three data points. The committee has now decided to assess three SLOs each year to better assess trends. Now in a ten year period, this schedule would be five data points. Every other year, the committee will compose a synthesis report. Further the timeline now reflects certain steps along the process and the expected timeline for that as well, including dates for data requests and application of rubrics to student work.

## **Program Refinements**

The survey done this year has shown that several departments have refined either courses within their program or have created new courses to address deficiencies in either reaching program goals or specifically College-wide Student Learning Outcomes goals. The surveys are in the appendix, but summarized here in Table XX, by department are the reported changes to date.

Department	Program or course changes since the	Program or course changes since the		
	CwSLOA 2014-2015 period	CwSLOA 2015-2016 period		
Chemistry Introduction of specific questions into		Reiteration of the Scientific method		
	the exams in FCH 110/111, FCH	throughout the curriculum all courses		
	150/151 and FCH 152/153 to better	will reinforce this topic and it will be		
	assess Outcomes 1a, 1b 1c and 1d which	assessed in FCH 495 and FCH 498		
	are student learning objectives in these	through the proposal and final		
	courses.	research paper.		

Table 4	Program	refinements	hased un	on the 201	4-2015 a	nd the 201	6-2017	renort
	Trogram	rennements	baseu up	JII LIIC 201	LT-2015 a	nu the 201	0-2017	ιερυιί

We now require FCH 232 Career skills	Investigate opportunities to work
for Chemists – a new course designed to	toward better knowledge and skills
emphasize ethics and to assess 1D, and	retention.
1E in a position paper which also covers	
basic communications.	
Switched timing for ESF200 – effects	
information literacy – occurs earlier in	
the sequence in the student's career so it	
will be reinforced as student's progress	
through the major more effectively.	
Introduced INFO LIT in FCH 132 and are	
now requiring presentations, ethics day	
on plagiarism in addition to Student	
Affairs (would like to do this in place so	
we don't waste a day).	

### Table 4. Continued.

Department	Program or course changes since the	Program or course changes since the
	CwSLOA 2014-2015 period	CwSLOA 2015-2016 period
Environmental	Did not report	Did not report
and Forestry		
Biology		
Environmental	No major changes to courses or	The program-specific assessment done
Resources	curriculum.	over the last several years did not
Engineeering		suggest revisions to the curriculum
		were needed to meet the expectations
		of quantitative reasoning (a and e) or
		critical thinking (a, b, c, e).
	Change made to materials collected for	
	Assessment in that a description of the	
	expectations of the final reports in ERE	
	489 is now transmitted with the reports.	
	Increased incorporation of ethics topics	
	in ERE 488.	
Environmental	Did not report	Did not report
Science		

Environmental	We have developed a senior reflection	We believe that our program is already
Studies	paper to be added to graduation	very strong in developing and
	requirements. We plan to submit our	assessing critical thinking skills.
	proposal to the committee on	
	curriculum this year. Students will not	
	graded on this paper; it will serve the	
	purpose of helping our faculty determine	
	whether and how we are meeting our	
	overall learning objectives. We ask that	
	students reflect honestly and	
	thoughtfully about their educational	
	experience at ESF, illustrating how	
	students' coursework and synthesis	
	projects have or have not achieved the	
	program learning objectives. These	
	papers, while focused on our	
	departmental learning outcomes, will be	
	useful in providing data to compliment	
	other assessment measures.	

### Table 4. Continued.

Department	Program or course changes since the	Program or course changes since the
	CwSLOA 2014-2015 period	CwSLOA 2015-2016 period
	We eliminated a pre and post program	We address quantitative reasoning
	survey that was criticized in the Middle	mostly through biophysical
	States report.	requirements outside of our
		department and we are expanding our
		efforts to collaborate with other
		departments to improve our students
		meeting expectation in this arena.
	We have added an environmental	In addition, there is a new faculty
	studies undergraduate research	member in our department who works
	methods class, EST 255 that focuses on	predominantly with quantitative
	scientific and quantitative reasoning	reasoning. Her ENS classes are often
	and, critical thinking.	populated by EST students.
Forest and	CM: No curricular changes have been	CM: To be determined.
Natural	made. This programs was just added to	
Resources	the department in 2015-16 and has not	
Management	yet been reviewed or	
	assessed. Departmental student	

	learning outcomes are still in	
	development.	
	SEM: Two now constance course SPE	SEM: We revised the SEM curriculum
	AEO and SPE 401 wore created and will	to add four now courses all of which
	450 and SKE 491, were created and win	to add four new courses, an or which
	be used for departmental assessment.	address quantitative reasoning and
		critical thinking.
	SEM: Four other courses were	
	developed to meet department learning	
	outcomes: SRE 225 Physics of Energy,	
	SRE 417 Energy Resource Assessment,	
	SRE 419 Energy Policy Assessment	
	Methodologies, SRE 479 Life Cycle	
	Assessment	
	FRN, NRM, FES: No curricular changes	FRN,NRM, FES: No
	have been made. Programs are	
	reviewed on a four to five year cycle.	
Landscape	Did not report	Did not report
Architecture		
Paper &	None.	None.
Bioprocess		
Engineering		

# **Recommendations for Future Assessment**

Many of the recommendations for future assessment have revolved around streamlining and creating a more efficient process. While the committee agrees that what has been created is sustainable, we also feel that there are redundancies that need to be removed and that generally the SLO's need to be refined. In some cases we are learning for example, that it is best to have specific SLO's assessed by departmental faculty and in others, we see significant overlaps between SLO's and even more significantly that within an SLO, we have levels of where they can be addressed. The committee agrees with moving to a model where introductory SLO's are assessed in some courses while SLO's that would indicate emphasis/reinforcement/mastery are assessed in higher level courses.

For 2016/2017 the committee plans to create a five year assessment plan to organize their assessment efforts, to broadly communicate to the campus more about college-wide student

learning outcomes and to create a more cohesive map of the curriculum with respect to the basic competencies we expect for each of our students. To do this some of the ideas being considered include:

- Working through all six of the outcomes to look for redundancy, and understanding and refining where we are getting the data
- Collaboratively design how to map and keep the levels (introductory to mastery) organized
- Curriculum map of SLO's with courses using both catalog descriptions and syllabus mapping to make data collection easier
- Host a college-wide workshop on CwSLO's to make this an institutional tract and to create institutional memory around SLO's assessment and data collection
- Create a better understanding across campus about what it means to graduate from ESF, and what the basic set of competencies that every ESF students should have, are.
- Using materials outside of program requirements such as co-curricular activities, such as community service, international experiences in particular for SLO#4: Values, ethics and diverse perspecties
- Utilize the program-specific assessment that is already being performed to be more efficient in CwSLO assessment

# **Timeline for Future Assessment**

**Committee Timeline** 

March, April, May and September – requests for student work will be made to faculty, a request is in progress for AY1516.

October 1 – data from previous academic year is due – annually

November – rubrics are applied and data collected for the student work collected

January – draft report written and submitted to faculty for review and comment

March – report is finalized by the committee and released to faculty

May – report is endorsed by Academic Governance

### **Student Learning Outcome Schedule**

AY 2015/2016 - Outcomes 1, 2, and 6\*

- Progress report less synthesis unless an issue can be easily identified
- Assessing data from AY 2014/2015
   \* we did two years of work on SLO #6 because it was not assessed previously

AY 2016/2017 – Outcomes 3, 4, 5 and 1\*

- Synthesis Report comprehensive look at all six outcomes with two years of data and all previous synthesis report
- Assessing data from AY 2015/2016
   \* there was insufficient student work to review that addressed this outcome in the previous year, therefore it will be assessed this year under the revised data collection protocol

AY 2017/2018 - Outcomes 1, 2, and 6

- Progress report less synthesis unless an issue can be easily identified
- Assessing data from AY 2016/2017

AY 2018/2019 - Outcomes 3, 4, and 5

- Synthesis Report comprehensive look at all six outcomes with two years of data and all previous synthesis report
- Assessing data from AY 2017-2018

# Appendix

**APPENDIX I - General Education Report from Academic Year 2014-2015** 

# **APPENDIX II - Student Learning Outcomes and Rubrics for Critical Thinking**

### Critical Thinking (SLO #6)

Students will be able to interpret, analyze and integrate data with theory and evidence and to synthesize and apply knowledge to identify problems, propose solutions and make decisions.

# 6.a Locate, select, and interpret data or information using quantitative and qualitative analytical skills. [this is 1c/4c]

### 6.b Carefully analyze and integrate theory, data and evidence appropriate to discipline.

### 6.c Synthesize and apply knowledge to identify problems, propose solutions and make decisions.

### 6.d Communicate clearly with a target audience.

Rubric for assessing student work

Student Learning Outcome	Exceeding Expectation	Meeting Expectations	Approaching Expectations	Not-Meeting Expectations
6.a Locate, select, and interpret data or information using quantitative and qualitative analytical skills.	References are present and discussed critically in the text. A variety of references are used and integrated.	References are present and may be discussed critically in the text. Less variety of reference materials used. Very few references are present and inadequately discussed critically. References are inappropriate and citation style		Fails to give references, or uses limited or questionable sources, no analysis of references.
6.b Carefully analyze and integrate theory, data and evidence appropriate to discipline.	Critically evaluates and analyzes information consistently and thoughtfully.	Evaluates and analyzes information from a sufficient number of sources.	Uses incomplete information, fails to adequately evaluate information consistently.	Does not evaluate and integrate sufficient, relevant information. Fails to evaluate information thoughtfully.
6.c Synthesize and apply knowledge to identify problems, propose solutions and make decisions.	Students are able to clearly identify problems, propose and defend well-supported, relevant solutions and make decisions providing clear justification and reasoning.	Students are able to identify problems adequately, propose at least one adequate solution to problem, and provide adequate justification or reasoning using information. Determine whether solutions meet constraints. Finds all relevant information that affects	Student insufficiently identifies or understands problem, provides few solutions and provides insufficient justification or reasoning using available information.	Student is unable to identify or understand problem. Student fails to propose and justify relevant solutions. Student fails to connect evidence to provide reasoning for solutions or decisions based on available information.

		solution		
Student Learning Outcome	Exceeding Expectation	Meeting Expectations	Approaching Expectations	Not-Meeting Expectations
6.d Communicate clearly with a target audience.	Clearly articulated thesis or purpose; well developed and clear explanation; coherent and cohesive argument; audience appropriate language (e.g., jargon, terminology)	Clearly articulated thesis or purpose; partially developed explanation; argument lacks organization and clarity; some language choices are inconsistent and require clarification	Unclear or poorly articulated thesis or purpose; lacks clear explanation; argument somewhat lacking organization and clarity and cohesion; many language choices are inappropriate	Lacks an articulated thesis or purpose; disorganized, obscure or garbled explanation; disjointed argument; inappropriate language

**APPENDIX III - Faculty comments and feedback from report draft and review** 

Prefix Course Number	Course Name	SLO 1: Scientific Reasoning SLO	2: Quantitative Reasoning	SLO 3: Communication	SLO 4: Tech & Info Literacy SL	O 5: Values, Ethics, Diverse Perspective	es SLO 6: Critical Thinking
APM 101	Fundamentals of College Algebra		Х				
APM 103	Applied College Algebra & Trig		Х				
APM 104	College Algebra & PreCalc		Х				
APM 105	Surveyof Calc & its Applications		X				
APM 106	Survey of Calc & its Applications II		X				
APM 115	Essential Calc		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				
APM 206	Calc II for Science & Engineering		X				
APM 255	Computing Applications		X		Х		
APM 307	Multivariable Calc						
APM 360	Intro to Computer Programming				Х		Х
APM 391	Intro to Probability & Stats		Х				
APM 395	Probability & Stats for Engineers		x				
APM 485	Differential Equations for Engineers & Scientists	~	X				
BPE 132	Intro to Process Engineering 1	× ×					
BPE 230	The Chine Experience	A				X	X
BPE 296	Special Topics in Engineering						
BPE 300	Intro to Industrial Bioprocessing	Х					
BPE 304	Summer Internship in Bioprocess Engineering						
BPE 305	Co-op Experience in Bioprocess Engineering						
BPE 310	Colloid and Interface Science	*					
BPE 336	Transport Phenomena Lab	Ŷ					
BPE 420	Bioseparations	X					
BPE 421	Bioprocess Kinetics & Systems Engineering	X					
BPE 430	Process Operations Laboratory	X					
BPE 435	Unit Process Operations	x					
BPE 438	Intro to Biorefinery Processes	X					
BPE 440	Bioprocess & Systems Laboratory	X				×	×
BPE 441	Biomass Energy Biomacess Engineering Design	x				^	×
BPE 496	Special Drips	~					~
BPE 498	Research Problem in Bioprocess Engineering	Х	Х	Х	Х	Х	х
BTC 132	Orientation Seminar						
BTC 298	Research Apprenticeship in Biotechnology						
BTC 401	Molecular Biology Techniques	X					
BIC 425	Plant Biotechnology	X					
BTC 420	Plant Tissue Culture Methods Recearch Decign & Professional Development	X				¥	Y
BTC 498	Research Problems in Biotechnology	X	Х	Х	Х	X	X
BTC 499	Senior Project Synthesis	x	x	X	x	x	X
CME 132	Orientation Seminar: Sustainable Construction Management & Engineering						
CME 151	Introduction to Financial Accounting		Х				
CME 202	Introduction to Professional Communications			Х		Y	
CME 215	Sustainable Construction	v				X	
CME 220	Introduction to Managerial Accounting	^	x				
CME 255	Plan Interpretation and Quantity Takeoff	Х	~				х
CME 303	Sustainable Construction Management & Engineering Internship						
CME 304	Environmental Performance Measures fo Buildings	Х					Х
CME 305	Sustainable Energy Systems for Buildings					X	
CME 306	Engineering Materials for Sustainable Construction	V					X
CIVIE 322	Mechanical Processing	×					
CME 320	Site Investigation & Solutions	x					
CME 330	Building Code of New York State						х
CME 331	Construction Safety					Х	Х
CME 332	Mechanical & Electrical Equipment				X		X
CME 335	Cost Engineering	N.	Х				
CME 342	Light Construction	X	Y				
CME 350	Construction Methods & Equipment	¥	*		¥		Y
CME 376	Decay of Wood Products	x			~		~
CME 387	Renewable Materials for Sustainable Construction	X					
CME 388	Wood and Fiber Identification Laboratory	Х					
CME 389	Wood Identification Laboratory	X					
CME 390	Fiber Identification Laboratory	X					
CME 400	Introduction to Forest Products	X					
CME 404	Applied Structures	X					
CME 410	Computer-Aided Design & Drafting	0			X		
CME 422	Composite Materials for Sustainable Construction	х			••		
CME 444	Materials Marketing			Х			
CME 453	Construction Planning & Scheduling	X					X
CME 454	Construction Project Management		Х				x
CME 455	Construction Contracts & Specifications	N.					X
CME 480	Fundamentals of Microscopy Wood Chemistry & Physics	X					
UNL 407	Wood Onomary & Filyalda	^					
CME 488	Professional Construction Project Mat. Presentation, Seminar			X			¥

Prefix Course Number	Course Name	SLO 1: Scientific Reasoning	SLO 2: Quantitative Reasoning	SLO 3: Communication	SLO 4: Tech & Info Literacy	SLO 5: Values, Ethics, Diverse Perspectives	SLO 6: Critical Thinking
CME 495	Undergraduate Experience in College Teaching					~	
CME 497 CME 498	Senior Etnics Seminar Research or Design Problem	x	x	X	x	X	x
CMN 220	Public Presentation Skills	~	~	X	~	X	~
CMN 420	Advanced Public Presentation Skills			Х			
CMN 440	Environmental Visualization			X			
CMN 493	Environmental Communication Workshop	~		X			
EFB 103	General Biolog I/ EFB 102. Lab	× ×					
EFB 120	The Global Environment & the Evolution of Human Society	X				Х	
EFB 132	Orientation Seminar: Environmental & Forest Biology						
EFB 200	The Physics of Life	Х					
EFB 202	Ecological Monitoring & Biodiversity Assessment	×		Х		X	X
EFB 211	Diversity of Life II	X				~	
EFB 220	Lirban Ecology	¥				X	×
EFB 296	Special Topics in Environmental & Forest Biology	×				~	~
EFB 298	Research Apprenticeship in Environmental Biology						
EFB 303	Introductory Environmental Microbology	Х					
EFB 305	Indigenous Issues & the Environment	×				X	
EFB 307	Principles of Genetics/ EFB 308: Lab Principles of Evolution	*					
EFB 312	Introduction to Personal Environmental Interpretation. Methods	x		x			x
EFB 320	General Eoclogy	X				X	X
EFB 325	Cell Biology	Х					
EFB 327	Adirondack Flora	X					
EFB 335	Dendrology	× ×					
EFB 337	Field Ethnohotany	×				x	
EFB 340	Forest & Shade Tree Pathology	x				~	
EFB 342	Fungal Diversity & Ecology	х					
EFB 345	Forest Health	Х					
EFB 351	Forest Entomology	×					
EFB 352	Entomology	X					
EFB 360	Enidemiology	X	X				x
EFB 381	Vertebrate Museum Techniques	x	X				~
EFB 384	Field Herpetology	Х					
EFB 385	Comparative Vertebrate Anatomy	<u>X</u>					
EFB 388	Ecology of Adirondack Fishes	× ×				~	~
EFB 390	Toxic Health Hazards	×				×	×
EFB 404	Natural History Museums & Modern Science	~		Х	х	x	x
EFB 405	Literature of Natural History			Х			Х
EFB 406	Great Naturalist Seminar			Х			
EFB 411	Research Methods: Understanding the Adirondack Ecosystem	X			X	X	X
EFB 413	Introduction to Conservation Biology	Ŷ		x	X	X	x
EFB 414	Senior Synthesis in Conservation Biology	X	х	X	X	X	X
EFB 415	Ecological Biogeochemistry	Х					
EFB 417	Non-personal Environmental Interpretive Methods	X		X	X		X
EFB 418	Interpretation of Field Biology Problem Solving in Concernation Biology	X		X	X		×
EFB 420	Internship in Environmental & Enrest Biology						^
EFB 423	Marine Ecology	х					
EFB 424	Limnology: Study of Inland Waters	Х					
EFB 427	Plant Anatomy & Development	<u>X</u>					
EFB 428	Myconnizar Ecology Ecosystem Restoration Design	X					
EFB 435	Flowering Plants: Diversity, Evolution, & Systematics	X					
EFB 437	Plant Propagation	X					
EFB 439	Forest Health Monitoring	Х		Х			Х
EFB 440	Mycology	<u> </u>				v.	
EFB 444	Biodiversity and Geography of Nature	× ×				X	×
EFB 446	Fight Ecology & Global Change	×				^	^
EFB 453	Parasitology	X					
EFB 462	Animal Physiology - Environmental & Ecological	Х					
EFB 480	Principles of Animal Behavior	x					
EFB 482	Unithology Memoral Diversity	<u>×</u>					
EFB 484	Mammalian Winter Ecology	X					
EFB 485	Herpetology	x					
EFB 486	Ichthyology	X					
EFB 487	Fisheries Science & Management	X					
EFB 488	Fisheries Science Practicum	X					~ ~ ~
EFB 491 FFB 492	Applied Wildlife Science Senior Synthesis in Aquatic & Ficheriae, Science	× ×	Y	Y	×	X	X
EFB 493	Wildlife Habitats and Populations	X	x	^	^	x	X
EFB 494	Senior Synthesis in Forest Health	x	X	Х	X	X	X
EFB 495	Undergraduate Experience in College Teaching						

10     Act	Prefix Course Number	Course Name	SLO 1: Scientific Reasoning	SLO 2: Quantitative Reasoning	SLO 3: Communication	SLO 4: Tech & Info Literacy	SLO 5: Values, Ethics, Diverse Perspectives	SLO 6: Critical Thinking
19     9     0     Normal from Support I from Support I form Suppor	EFB 496	Special Topics in Environmental and Forest Biology						
No.         No. <td>EFB 497</td> <td>Seminar</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	EFB 497	Seminar						
No.     No.     No.     No.     No.     No.     No.       No.     No.     No.     No.     No.     No.       No.     No.     No	EFB 498	Research Problems in Environmental & Forest Biology	<u>×</u>	X	X	X	X	X
B0     B0     B0     B	EHS 250	Foundations of Environmental Health	X		V		Y.	× ×
Bar	EHS 320	Disease Prevention	*		<u>×</u>		×	X
No.         No. <td>EHS 420</td> <td>Environmental realth Management</td> <td>~</td> <td></td> <td>^</td> <td></td> <td>^</td> <td>^</td>	EHS 420	Environmental realth Management	~		^		^	^
10     10     Anima Social Sequence     1     1     1     1     1       10     10     1     1     1     1     1     1       10     10     1     1     1     1     1     1       10     10     10     1     1     1     1     1       10     10     10     1     1     1     1     1       10     10     10     10     1     1     1     1     1       10	EHS 440	Occurational Health & Safety						
Bit Decision Solver	EHS 480	Hazardous Waste Management	x		x		X	X
10     0.000     Note Construction of Antipathy     1     N     N     N     N       10     0.000     Note Construction of Antipathy     N     N     N       10     0.000     Note Construction of Antipathy     N     N     N       10     0.000     Note Construction of Antipathy     N     N     N       10     0.000     Note Construction of Antipathy     N     N     N       10     0.000     Note Construction of Antipathy     N     N     N       10     0.000     Note Construction of Antipathy     N     N     N       10     0.000     Note Construction of Antipathy     N     N     N     N       10     0.000     Note Construction of Antipathy     N     N     N     N       10     0.000     Note Construction of Antipathy     N     N     N     N       10     0.000     Note Construction of Antipathy     N     N     N     N       10     0.0000     N     N     N     N     N       10     0.0000     N     N     N     N     N       10     0.0000     N     N     N     N     N        10     0.0000 </td <td>ENS 132</td> <td>Orientation Seminar: Environmental Science</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	ENS 132	Orientation Seminar: Environmental Science						
181     0.     Acting of Management with a second s	ENS 200	Climate Change Science & Sustainability	х			Х	Х	х
B1     A     A     A     A     A       B2     Constraint Registering     A     A     A     A       B3     Constraint Registering     A     A     A     A       B3     Constrain	ENS 250	Foundations of Environmental Health	Х				Х	Х
No.         And board mean and any and any	ENS 260	Environmental Sampling Methods	Х					
10     30     And yours     3     A	ENS 296	Special Topics in Environmental Science						
BB     <	ENS 325	Energy Systems	X	X		X	M	<u>×</u>
PR 00         Promote Name         A         A         A         A         A         A         A         A           00         Decomposition Name         A	ENS 335	Renewable Energy	X		V		<u>×</u>	<u> </u>
No. 40       No. 40     No. 40     No. 40     No. 40     No. 40     No. 40       No. 40     No. 40     No. 40     No. 40     No. 40     No. 40       No. 40     No. 40     No. 40     No. 40     No. 40     No. 40       No. 40     No. 40     No. 40     No. 40     No. 40     No. 40       No. 40     No. 40     No. 40     No. 40     No. 40     No. 40       No. 40     No. 40     No. 40     No. 40     No. 40     No. 40       No. 40     No. 40     No. 40     No. 40     No. 40     No. 40       No. 40     No. 40     No. 40     No. 40     No. 40     No. 40       No. 40     No. 40     No. 40     No. 40     No. 40     No. 40       No. 40     No. 40     No. 40     No. 40     No. 40     No. 40       No. 40     No. 40     No. 40     No. 40     No. 40     No. 40       No. 40     No. 40     No. 40     No. 40     No. 40     No. 40       No. 40     No. 40     No. 40     No. 40     No. 40     No. 40       No. 40     No. 40     No. 40     No. 40     No. 40       No.	ENS 300		~	v	^	v	÷	÷
No. 50.No. 7.N.<	ENS 441	Energy Warkets & Regulation	¥	~		~	Y Y	× ×
No. 00     Result ingraphics     No. 0     No	ENS 450	Beneweable Energy Capstone Planning	x	x	X	x	X	×
RS d.     Normal Mathematical Mathematity Mathamatical Mathamatical Mathematical Mathamatical Ma	ENS 460	Renewable Energy Capstone	X	X	X	X	X	X
SQ     Max     A	ENS 470	Environmental Risk Assessment	X	X	X	x	X	x
88. 48. 48. estandard issues figuing     8. 4 <td< td=""><td>ENS 480</td><td>Hazardous Materials Management</td><td></td><td></td><td>Х</td><td></td><td>Х</td><td>Х</td></td<>	ENS 480	Hazardous Materials Management			Х		Х	Х
Bit delta     Reade And Readers in Recorder al Resource Ansample and and an and and and and and and and	ENS 494	Environmental Science Capstone	Х	X	Х	X	Х	Х
Notabel Spreament Henron Expension         Network Spreament Henron Expension         Network Spreament S	ENS 498	Research Problems in Environmental Science	Х	X	Х	X	X	Х
No.         Notation Statewing         Notation Statewing <td>ERE 132</td> <td>Introduction to Environmental Resources Engineering</td> <td>~</td> <td></td> <td></td> <td></td> <td></td> <td></td>	ERE 132	Introduction to Environmental Resources Engineering	~					
Price         A         A         A           Price         A         A         A      Price         A         A	ERE 133	Introduction to Engineering Design	X					
Control for binding fragment         A         A         A           100         Control for binding fragment         A         A         A           101         Control for binding fragment         A         A         A         A           101         Control for binding fragment         A         A         A         A         A           101         Control for binding fragment         A         A         A         A <td>ERE 2/3</td> <td>Ecological Engineering</td> <td>X</td> <td></td> <td></td> <td></td> <td>~</td> <td></td>	ERE 2/3	Ecological Engineering	X				~	
Pick Sol         Pick Max Max Marked         X         X         X           Sol         Pick Max Marked	ERE 311	Ecological Engineering in the Tropics	Ă	×			Å	
bit     bit<	ERE 339	Fluid Mechanics	x	x				
Bit     Bute Englandry Themodynemic     X     X     X       Bit     Bute Englandry Themodynemic     X     X     X     X       Bit     Structure S	ERE 340	Engineering Hydrology & Hydraulics	x	~			Х	
Res     Name of any angle sharing     N     N       811     Sinverly le Engenenge     N     N     N     N     N       821     Sinverly le Engenenge     N     N     N     N     N       821     Sinverly le Engenenge     N     N     N     N     N       823     Sinverly le Engenenge     N     N     N     N     N       824     Sinverly le Engenenge     N     N     N     N     N       824     Sinverly le Engenenge     N     N     N     N     N       824     Sinverly le Engenenge     N     N     N     N     N       824     Sinverly le Engenenge     N     N     N     N     N       824     Sinverly le Engenenge     N     N     N     N     N       824     Sinverly le Engenenge     N     N     N     N     N       824     Sinverly le Engenenge     N     N     N     N     N       824     Sinverly le Engenenge     N     N     N     N     N       824     Sinverly le Engenenge     N     N     N     N     N       824     Sinverly le Engenenge     N     N	ERE 351	Basic Engineering Thermodynamics	x				~	Х
Bit     Sinvery Setter     Sinvery Setter     X     X     X     X       Bit     Convery Setter     Sinvery Setter     X     X     X       Bit     Convery Setter     X     X     X     X     X       Bit     Convery Setter     X     X     X     X     X     X       Bit     Convery Setter     X     X     X     X     X     X       Bit     Convery Setter     X     X     X     X     X     X       Bit     Convery Setter     X     X     X     X     X     X     X       Bit     Convery Setter     X     X     X     X     X     X     X     X       Bit     Convery Setter     X     X     X     X     X     X     X     X     X     X       Bit     Convery Setter     X     X     X     X     X     X	ERE 365	Principles of Remote Sensing		Х		Х		
Res     Berg Speens Engineering     N     N     N     N       Res     See	ERE 371	Surveying for Engineers		Х				
Bell     Mechanical balan     N	ERE 380	Energy Systems Engineering		Х			Х	Х
Bit of Statistic Francesion       X       X       X       X       X         Bit of Statistic Francesion       X       X       X       X       X       X         Bit of Statistic Francesion       X	ERE 385	Mechanical Design	Х					
Bit       Internal Process       N	ERE 405	Sustainable Engineering					X	X
Pite     201     Control     A	ERE 412	River Form & Process	X				X	X
Pic     40     Note and Valence Integend     A	ERE 425	Ecosystem Restroation & Design	*	V			X	X
CHE     14/d     high-biddening     X     X     X     X     X       ERE     4.4.     high-biddening     X     X     X     X       ERE     4.5.     high-biddening     X     X     X     X     X       ERE     4.5.     high-biddening     X     X     X     X     X       ERE     4.6.     high-biddening     high-biddening     X     X     X     X     X     X       ERE     4.6.     high-biddening     high-biddening     high-biddening     X     X     X     X     X     X       ERE     4.6.     high-biddening     high-biddening     high-biddening     high-biddening     High-biddening     High-biddening       ERE     4.6.     high-biddening     high-biddening     high-biddenin	ERE 430	Engineering Decision Analysis	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Χ			v	~
ERE       445       hydroxige Modeling       X       X       X       n <td>ERE 440</td> <td>Water and wastewater meanment</td> <td>Ŷ</td> <td>Y</td> <td></td> <td>Y</td> <td>Ŷ</td> <td>Y</td>	ERE 440	Water and wastewater meanment	Ŷ	Y		Y	Ŷ	Y
RFE       448       Open Channel Hydraules       X       A         RFE       450       Envormental Astems Engineering       X       X       X         RFE       450       Envormental Astems Engineering       X <td< td=""><td>ERE 445</td><td>Hydrologic Modeling</td><td>x</td><td>x</td><td></td><td>X</td><td>Χ.</td><td>~</td></td<>	ERE 445	Hydrologic Modeling	x	x		X	Χ.	~
RE       6.9.       Environmental Mystanis Enjoneming       X       X       X         RE       6.9.       Environmental Mystanis Enjoneming       X </td <td>ERE 448</td> <td>Open Channel Hydraulics</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td>	ERE 448	Open Channel Hydraulics	X					
RF     65     Environmental Systems Engineering     X     X       RF     650 dS A ExactorWater Engineering     X     X     X       RF     650 dS A ExactorWater Engineering     X     X     X     X       RF     650 dS A ExactorWater Engineering     X     X     X     X     X       RF     650 dS ExactorWater Engineering     X     X     X     X     X     X       RF     650 dS ExactorWater Engineering     X <td>ERE 450</td> <td>Environmental Hydraulics</td> <td>Х</td> <td></td> <td></td> <td></td> <td></td> <td></td>	ERE 450	Environmental Hydraulics	Х					
RE       460       Solid A hzardoulWase Engineering       X	ERE 465	Environmental Systems Engineering	Х	Х				
RR476Ecological Engeneering Protect Mater QualityXX <td>ERE 468</td> <td>Solid &amp; HazardousWaste Engineering</td> <td></td> <td></td> <td></td> <td></td> <td>Х</td> <td></td>	ERE 468	Solid & HazardousWaste Engineering					Х	
Ref. 460       Fails & Transport of Contaminants in Environmental Systems       X       X       X       X       X         Ref. 460       Engineering Presenting Presenting Presenting & Design       X </td <td>ERE 475</td> <td>Ecological Engineering for Water Quality</td> <td>Х</td> <td></td> <td></td> <td></td> <td>Х</td> <td>Х</td>	ERE 475	Ecological Engineering for Water Quality	Х				Х	Х
Name         X	ERE 480	Fate & Transport of Contaminants in Environmental Systems	X				X	
Enter 366       Environmental resources Engineering A Lesgin       A	ERE 488	Engineering Project Management	X	V	X	×	Y	X
Sector Alphase         X	ERE 489	Environmental Resources Engineering Planning & Design	Χ	Χ	*	X	X	X
No.       A       A       A       A       A       A       A       A         101       Output Longening       Control of the formane and searce       Image: Control of the formation of the formatio of the formation of the formation of the for	ERE 490	search Problem in Environmental Resources. Enrineering	¥	x	¥	Y	¥	Y
126       268       Suecial Torks in Environmental Science       ×<	ESC 132	Orientation Seminar	^	^	^	^	^	^
ESC 325       Energy Systems       X	ESC 296	Special Topics in Environmental Science						
ESC 422       Energy Markets & Regulation       X	ESC 325	Energy Systems	Х	Х				Х
ESC. 460         Renewable Energy Caustone Planning         X	ESC 422	Energy Markets & Regulation		X			X	Х
ESF 109       Honors Seminar in Environmental Science & Forestry       X         ESF 200       Information Literay       X         ESF 200       Information Environmental Science & Forestry       X         ESF 201       Introduction to Environmental Science & Forestry       X         ESF 203       Introduction to Environmental Science & Forestry       X         ESF 204       Introduction to Environmental Science & Forestry       X         EST 120       Introduction to Environmental Science & Forestry       X         EST 201       US History Reconstruction to Environmental Science & Construction to Environmental	ESC 450	Renewable Energy Capstone Planning	Х	X	Х	Х	Х	Х
ESF 122       The Ecology of the Economic Process       X         ESF 200       Information Literacy       X         ESF 201       Inforduction to Economic Process (Information Technologies)       X         ESF 102       Inforduction to Economic Process (Information Technologies)       X         EST 1132       Introduction to Economic Process (Information Technologies)       X         EST 101       Introduction to Economic Process (Information Technologies)       X         EST 201       Unduction to Economic Process (Information Technologies)       X         EST 202       Utural Ecology       X       X         EST 203       Uufural Ecology       X       X         EST 204       Utural Ecology       X       X         EST 205       Utural Ecology       X       X         EST 206       Utural Ecology       X       X         EST 207       Utural Ecology       X       X         EST 208       The China Experience       X       X         EST 209       Inforduction to Maire Process (Informatian Economic Eco	ESF 109	Honors Seminar in Environmental Science & Forestry						
Lsb 200       Information Litratory       X         SEP 209       Honors Seminar in Environmental Science & Forestry       X         SEP 209       Introduction to Geospatial Information Technologies       X         SEP 209       Introduction to Seminarian Environmental Science & Forestry       X         SET 132       Introduction to Environmental Science & Forestry       X         SET 140       Introduction to Native Peoples, Land, & Culture       X         SET 200       Cultural Ecology       X       X         SET 201       US History Reconstruction to the Present       X       X         SET 202       American History, From Discovery to Civil War       X       X       X         SET 202       Urban Experience       X       X       X       X         SET 203       The China Experience       X       X       X       X       X         SET 203       The Vinomental Geology       X       X       X       X       X       X       X       X         SET 204       Environmental Geology       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X	ESF 122	The Ecology of the Economic Process	Х					
Expl 4/y       individual description       individual description       individual description         ESF 300       Introduction to Explormental Studies       X         EST 132       Introduction to Explormental Studies       X         EST 200       Cultural Ecology       X       X         EST 201       US History, From Discovery to Civil War       X       X         EST 202       American History, From Discovery to Civil War       X       X         EST 203       Us History, From Discovery to Civil War       X       X         EST 204       Understan History, From Discovery to Civil War       X       X         EST 205       Uben Ecology       X       X       X         EST 206       Est 207       Understan Explorede       X       X         EST 208       Est 209       War       X       X       X         EST 209       Urban Experience       X       X       X       X       X         EST 201       Environmental Geology       X	ESF 200	Information Literacy				X		
Exb 300       introduction to despinate intromation tecnologies       X         EST 132       Introduction to Exb romantal Studies       X       X         EST 140       Introduction to Exb romantal Studies       X       X         EST 201       Cultural Ecology       X       X       X         EST 202       American History, From Discovery to Civil War       X       X       X         EST 202       Uban Ecology       X       X       X       X         EST 203       Uban Ecology       X       X       X       X       X         EST 204       Uban Ecology       X	ESF 209	Honors Seminar in Environmental Science & Forestry				~		
Last indexadents of temportaneous       A         Last indexadents of temportaneous       X         EST 140       Introduction to Nater Peoples, Land, & Culture         EST 200       Cultural Ecology       X       X         EST 201       US History Reconstruction to the Present       X       X         EST 202       American History, From Discovery to Civil War       X       X         EST 203       Urban Ecology       X       X       X         EST 204       Urban Experience       X       X       X         EST 205       The Christory Ecology       X       X       X         EST 206       Urban Experience       X       X       X         EST 207       Environmental Geology       X       X       X         EST 208       Foundations of Environmental Studies       X       X       X         EST 205       Research Methods for Environmental Studies       X       X       X         EST 206       Special Topics in Environmental Studies       X       X       X         EST 206       Special Topics in Environmental Studies       X       X       X         EST 301       Leadership through Methoding       X       X       X         EST	ESF 300	Introduction to Geospatial Information   echnologies				X	×	
The inductant colory       A       A         S2 200       Cultural Ecology       X       X         EST 201       US Histor Reconstruction to the Present       X       X         EST 202       Undant Ecology       X       X       X         EST 203       Urban Ecology       X       X       X         EST 204       Urban Ecology       X       X       X         EST 205       Urban Ecology       X       X       X         EST 201       Urban Ecology       X       X       X         EST 203       The China Experience       X       X       X         EST 204       Environmental Geology       X       X       X         EST 205       Research Methods for Environmental Studies       X       X       X         EST 205       Research Methods for Environmental Studies       X       X       X         EST 205       Research Methods for Environmental Studies       X       X       X         EST 205       Research Methods for Environmental Studies       X       X       X         EST 206       Special Topics in Environmental Studies       X       X       X         EST 301       Leadership through Mentoring <td< td=""><td>EST 140</td><td>Introduction to Environmental Studies</td><td></td><td></td><td></td><td></td><td>× Y</td><td></td></td<>	EST 140	Introduction to Environmental Studies					× Y	
EST 201     US History Reconstruction to the Present     X     X       EST 202     American History From Discovery to Civil War     X     X       EST 202     Urban Experience     X     X       EST 231     Introduction to American Government     X     X       EST 231     Environmental Geology     X     X       EST 231     Environmental Studies     X     X       EST 245     Research Methods for Environmental Studies     X     X       EST 255     Research Methods for Environmental Studies     X     X       EST 231     Environmental Studies     X     X       EST 245     Research Methods for Environmental Studies     X     X       EST 245     Research Methods for Environmental Studies     X     X       EST 245     Special Topics in Environmental Studies     X     X       EST 246     Special Topics in Environmental Studies     X     X       EST 321     Government & He Environment     X     X       EST 323     Governmental Psechology     X     X       EST 321     Governmental Psechology     X     X       EST 323     Governmental Psechology     X     X       EST 324     Environmental Psechology     X     X       EST 336     Envi	EST 200	Cultural Ecology					Ŷ	Х
EST 202     American History: From Discovery to Civil War     X     X       EST 202     Urban Ecology     X     X       EST 21     Introduction to American Government     X     X       EST 230     The China Experience     X     X       EST 231     Environmental Geology     X     X       EST 234     Environmental Geology     X     X       EST 245     Foundations of Environmental Studies     X     X       EST 245     Research Methods for Environmental Studies     X     X       EST 246     Special Topics in Environmental Studies     X     X       EST 247     Government & Environmental Studies     X     X       EST 251     Government & Environmental Studies     X     X       EST 301     Leadership through Mentoning     X     X       EST 321     Government & Environmental Studies     X     X       EST 323     Environmental Studies     X     X       EST 321     Government & Environmental Studies     X     X       EST 323     Environmental Psychology     X     X       EST 331     History of the American Environmental Movement     X       EST 363     Attitudes, Values, and the Environmental Movement     X	EST 201	US History Reconstruction to the Present					x	x
EST 220     Urban Ecology     X     X       EST 221     Introduction to American Government     X     X       EST 230     The China Experience     X     X       EST 231     Environmental Geology     X     X       EST 235     Foundations of Environmental Studies     X     X       EST 245     Research Methods for Environmental Studies     X     X       EST 256     Research Methods for Environmental Studies     X     X       EST 245     Special Topics in Environmental Studies     X     X       EST 246     Special Topics in Environmental Studies     X     X       EST 301     Leadership through Mentoring     X     X       EST 321     Government & the Environment Environment Studies     X     X       EST 323     Government & the Environment Envi	EST 202	American History: From Discovery to Civil War					x	X
EST 221     Introduction to American Government     X     X       EST 231     The Chrine Experience     X     X       EST 231     Environmental Geology     X     X       EST 234     Environmental Geology     X     X       EST 235     Research Methods for Environmental Studies     X     X       EST 256     Research Methods for Environmental Studies     X     X       EST 296     Special Topics in Environmental Studies     X     X       EST 301     Leadership through Methoding     X     X       EST 325     Governmental Psychology     X     X       EST 331     Governmental Psychology     X     X       EST 331     History of the American Environmental Movement     X       EST 361     History of the American Environmental Movement     X	EST 220	Urban Ecology					Х	Х
KST 230     The China Experience     X     X       EST 231     Environmental Geology     X     X     X       EST 245     Foundations of Environmental Studies     X     X     X       EST 245     Research Methods for Environmental Studies     X     X     X       EST 245     Special Topics in Environmental Studies     X     X     X       EST 245     Special Topics in Environmental Studies     X     X     X       EST 301     Leadership Incough Mentoring     X     X     X       EST 31     Government & the Environmental Studies     X     X       EST 325     Special Topics in Environmental Studies     X     X       EST 331     Leadership Incough Mentoring     X     X       EST 333     Environmental Environment Studies     X     X       EST 345     Environmental Newment     X     X       EST 361     History of the American Environment Studies     X	EST 221	Introduction to American Government					Х	Х
LST 231     Environmental Geology     X     X     X       EST 245     Foundations of Environmental Studies     X     X     X       EST 255     Research Methods for Environmental Studies     X     X     X       EST 256     Special Topics in Environmental Studies     X     X     X       EST 257     Special Topics in Environmental Studies     X     X     X       EST 301     Leadership through Mentoring     X     X     X       EST 301     Leadership through Mentoring     X     X     X       EST 326     Governmental Psychology     X     X     X       EST 361     History of the American Environmental Movement     X     X       EST 361     Attitudes, Values, and the Environment     X       EST 361     Attitudes, Values, and the Environment     X	EST 230	The China Experience					X	X
LST     245     Foundations of Environmental Communication     X       LST     256     Research Methods for Environmental Studies     X     X       LST     296     Special Topics in Environmental Studies     X     X       LST     296     Special Topics in Environmental Studies     X     X       LST     296     Special Topics in Environmental Studies     X     X       LST     296     Special Topics in Environmental Studies     X     X       LST     301     Leadership through Methoring     X     X       LST     326     Environmental Psychology     X     X       LST     353     Environmental Psychology     X     X       LST     361     History of the American Environment     X       LST     361     Attitudes, Values, and the Environment     X	EST 231	Environmental Geology				X	X	Х
Los L 250     Research metricos for Environmental studies     X     X       Special Topics in Environmental Studies         EST 296     Special Topics in Environmental Studies        EST 301     Leadership Incogin Mentoring     X     X       EST 321     Government & the Environment     X     X       EST 323     Environmental Psychology     X     X       EST 361     History of the American Environment     X       EST 364     Attitudes, Values, and the Environment     X	EST 245	Foundations of Environmental Communication	~	V	Х			
Call 290     Subsidi Tupica in Climital Studies       Call 290     Subsidi Tupica in Climital Studies       EST 301     Leadership through Mentioning       EST 321     Government & Mentioning       EST 323     Environmental Psychology       X     X       EST 331     History of the American Environmental Movement       EST 361     History of the American Environmental Movement       EST 363     Attitudes, Values, and the Environment	E01 200	Research Methods for Environmental Studies	X	X				
Construction     Construction     X     X       Str     321     Government & the Environment     X     X       Str     351     Environmental Psychology     X     X       Str     361     History of the American Environmental Movement     X       Str     361     Attitudes, Values, and the Environment     X	EG1 290 EST 301	Special ropids in Environmental Studies						
Est         Science         A         A           Est         353         Environmental Psychology         X         X           Est         361         History of the American Environmental Movement         X         X           Est         366         Attitudes, Values, and the Environment         X         X	FST 321	Government & the Environment					X	x
EST 361 History of the American Environmental Movement X EST 366 Attitudes, Values, and the Environment X	EST 353	Environmental Psychology	x				~	X
EST 366 Attitudes, Values, and the Environment X	EST 361	History of the American Environmental Movement	••				Х	
	EST 366	Attitudes, Values, and the Environment					Х	

Prefix Course Number	Course Name	SLO 1: Scientific Reasoning	SLO 2: Quantitative Reasoning	SLO 3: Communication	SLO 4: Tech & Info Literacy SI	LO 5: Values, Ethics, Diverse Perspectiv	ves SLO 6: Critical Thinking
EST 388	Psychological Principles of Risk Communication			Х		Х	Х
EST 390	Social Processes & the Environment					Х	
EST 393	Environmental Discourse & Communication			× ×	×	×	~
EST 400	Public Communication of Science & Technology Senior Report	v	×	× ×	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~	×
EST 400	Environmental Ethics & Culture: Perspectives on the Adirondack Park	~	~	~	~	x	^
EST 402	Diverse Perspective on a Common Landscape: Experiencing Adirondack Park					x	Х
EST 403	Sustainable Development: An Adirondack Park Case Study			Х		Х	Х
EST 404	Using Past Ex. To Inform Future Mgt.: Synthesizing the Adirondack Park					Х	Х
EST 412	Advanced Leadership Through Mentoring			Х		Х	Х
EST 423	Rhetorical Practices in Rhetorical Communication			X			
EST 426	Community Planning & Sustainability			X		X	~
EST 450	Environmental & Energy Additing			Y		Y	×
est 460	and lise law			~		×	~
EST 493	Environmental Communication Workshop			X			
EST 494	Senior Seminar in Environmental Studies	Х	Х	х	Х	Х	Х
EST 496	Special Topics in Environmental Studies						
EST 498	Introductory Research Problems	Х	Х	X	X	X	X
EST 499	Environmental Studies Internship						
EWP 190	Writing & the Environment			×			X
EWP 220	Prosentation Skills for Managers			- Â			×
EWP 290	Research Writing & Humanities			X			X
EWP 291	Research Writing & Humanities (Honors)			x			X
EWP 296	Special Topics in Writing, Literature, & Pubic Presentation Skills			х			Х
EWP 300	Survey of Environmental Writing			Х			Х
EWP 311	Urban Environmental Literature			X			
EWP 350	Eco-Cinema: Perspectives & Practices (Honors)			Х		X	X
EWP 390	Constana Experience	×	v	v	*	×	X
EWP 401	Capstone Experience Writing for Science, Professionals	^	^	Ŷ	^	^	^
EWP 407	Writing for Environmental & Science Professionals			x			
EWP 410	Writing for Environmental Professionals			X			
EWP 420	Public Presentation Skills			Х			
EWP 444	Professional Writing/Paper & Bioprocess Engineering			Х			
EWP 490	Contemporary Literature of Nature						X
EWP 494	Creative Non-fiction in the Sciences					¥	X
EWP 495	Environmental Journalism			X		X	X
EWP 496	Special Topics in Writing, Literature, & Public Presentation Skills			× ×			
EWP 490 FCH 110	Survey of Chemical Principles/ ECH 111 Lab			~			
FCH 132	Orientation Semiatric Chemistry						
FCH 150	General Chemistry I/ FCH151 Lab	Х					
FCH 152	General Chemistry II/FCH 153 Lab	Х					
FCH 210	Elements of Organic Chemistry	Х					
FCH 221	Organic Chemistry I / FCH 222 Lab	X					
FCH 223	Organic Chemistry II / FCH 224 Lab	X		×	×	×	~
FCH 232	Chemistry Topologing Assistant Experience for Undergraduates	X		~	Χ	X	×
FCH 296	Special Torics in Chemistry						
FCH 325	Organic Chemistry III	Х					
FCH 360	Physical Chemistry I	X					
FCH 361	Physical Chemistry II	Х					
FCH 380	Analytical Chemistry I: Fravimetric, Titrimetric, and Potentiometric Analysis	Х					
FCH 381	Analytical Chemistry II: Spectroscopic, Chromatographic, & Electroanalytical Instrumental Technique	×					
FCH 384	Spectrometric identification of Organic Compounds	X				v	
FCH 390	Drugs from the Wild	×				X	
FCH 410	Inorganic Chemistry	Ŷ					
FCH 430	Biochemistry I/ FCH 431 Lab	~					
FCH 432	Biochemistry II						
FCH 440	Introduction to Chemical Ecology	X					
FCH 495	Introduction to Professional Chemistry	X					
FCH 496	Special Problems in Chemistry	X		Х	X		Х
FCH 497	Undergraduate Seminar	×		v	×		×
FOR 106	Introduction to Green Entrepreneurship	X		X	^		X
FOR 132	Orientation Seminar: F&NRM						
FOR 201	Introduction to Watershed Hydrology	Х					
FOR 202	Introduction to Sociology	X				X	
FOR 203	Western Civilization & the Environment					Х	X
FOR 204	Natural Resources in American History					X	Х
FOR 205	Principles of Accounting		Х				
FOR 207	Introduction to Economics	X				×	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~
FUR 208	Introduction to Sustainable Energy Resources	X				X	X
FOR 296	matural nesources Ecology Special Topics in Resource, Management/Egrestry	X					
FOR 298	Research Internship in Forest & Natural Resources Management						
FOR 304	Adirondack Field Studies	Х					
FOR 312	Sociology of Natural Resources					X	Х
FOR 321	Forest Ecology & Silviculture	Х					
FOR 322	Natural Resources Measurements & Sampling	X	X				
FOR 323	Forest Biometrics	<u>X</u>					
FUR 330	Studies in Silviculture	X					
FUR 332	Forest Ecology	X					

Prefix Course Number	Course Name	SLO 1: Scientific Reasoning SLC	2: Quantitative Reasoning	SLO 3: Communication	SLO 4: Tech & Info Literacy SL	O 5: Values, Ethics, Diverse Perspectiv	es SLO 6: Critical Thinking
FOR 333	Natural Resources Managerial Economics	X					
FOR 334	Silviculture Meteorology	X					
FOR 340	Watershed Hydrology	X					
FOR 345	Introduction to Soils	Х					
FOR 360	Principles of Management		Х	Х		Х	X
FOR 370	Forest Management Decision Making & Planning Eurodamentals of Outdoor, Recreation	X		Y		Y	X
FOR 373	Forest Operations	X		X		~	~
FOR 402	Professional Forestry Mentoring Program			Х			
FOR 403	Humans & the Environment: New Zealand	Х		Х		Х	Х
FOR 404	Ecotrouism Abroad Analytical & Tochnical Writing for Resource, Managere			v			
FOR 416	Sustainable Energy Policy	X		X		X	X
FOR 433	Silviculture Workshop	x		A		X	~
FOR 442	Watershed Ecology & Management	Х		Х			Х
FOR 454	Renewable Energy Finance & Analysis	X	Х				
FOR 456	Natural Resources Policy						X
FOR 475	Recreation Behavior & Management			Х			x
FOR 476	Ecotourism & Nature Tourism					Х	
FOR 478	Wilderness & Wildlands Management			Х		Х	Х
FOR 480	Urban Forestry	× ×					
FOR 485	Business & Managerial Law	^					X
FOR 487	Environmental Law & Policy						x
FOR 489	Natural Resournces Law & Policy						X
FUR 490	Integrated Resources Management	~	v	v	v	X	<u>×</u>
FOR 491	Sustainable Energy management Capstone	A	X	Å	Å	X	~
FOR 496	Special Topics in Resource Management/Forestry						
FOR 498	Independent Study in Forest Resources Management						
FOR 499	Internship in Forest & Natural Resources Management						
FTC 101	Trigonometry for Natural Resoruce Technicians	v	X				
FTC 200	Dendrology	x					
FTC 202	Introduction to Surveying	X					Х
FTC 204	Introduction to Natural Resource Measurements	Х	Х				
FTC 205	Computer Aided Drafting & Design 1	×			X		
FTC 206	Communications & Safety	^		X			
FTC 208	Remote Sensing & GIS Technology			~	Х		
FTC 209	Timber Harvesting	Х					
FTC 210	Wildlife Techniques	X					
FTC 212	Adirondack Cultural Ecology	×					
FTC 213	Forest Inventory Practicum	x					
FTC 214	Leadership & Organizational Performance			Х			Х
FTC 217	Wildland Firefighting & Ecology	X		Y		~	~
FIC 219	Introduction to Forest Recreation			× ×		X	×
FTC 224	Field Applications			~		x	x
FTC 225	Timber Transportation & Utilization						Х
FTC 234	Wildlife Conservation	x		×		X	X
FIC 236	Interpretive Lechniques in Forest Recreation	×		Х			X
FTC 239	GIS Applications	^			Х		^
FTC 251	Advanced Surveying Measurements & Computations		X		X		Х
FTC 253	Survey Law						X
FTC 255	Boundary Surveying	X			X		X
FTC 257	Construction & Topographic, Surveys	X			X		X
FTC 259	Computer Aided Drafting & Design II	~			X		~
FTC 298	Independent Study in Forest Technology						
GNE 160	Computing Methods for Engineers & Scientists				Х		
GNE 171 GNE 172	Engineering Mechanic Dynamics Statics & Dynamics						
GNE 271	Statics						
GNE 273	Mechanics of Materials						
GNE 330	Professional Engineering Skills Seminar						
GNE 410	Structures Air Pollution Engineering						
GNE 461 HES 440	Air Poliution Engineering Occupational Health & Safety	X				X	x
LSA 132	Orientation Seminar: Landscape, Architecture	~				~	^
LSA 182	Drwaing Studio			Х			Х
LSA 190	Clasing Perspectives in the Built Environment			Х		X	X
LSA 205	Art, Culture, & Landscape I Art, Culture, & Landscape II			X		X	X
LSA 200	An, Culture, & Landscape If			λ		X	X
LSA 226	Foundation Design Studio I			Х	Х	~	~
LSA 227	Foundation Design Studio II			Х	Х		
LSA 300	Digital Methods & Graphics I			x	x		1

Prefix Course Number	Course Name	SLO 1: Scientific Reasoning	SLO 2: Quantitative Reasoning	SLO 3: Communication	SLO 4: Tech & Info Literacy	SLO 5: Values, Ethics, Diverse Perspectives	SLO 6: Critical Thinking
LSA 301	Digital Methods & Graphics II		-	Х	X		
LSA 305	History of Landscape Architecture I					X	X
LSA 306	History of Landscape Architecture II	~				X	X
LSA 312	Natural Processes in Design & Planning	Ŷ				Y	Y
LSA 321	Ecological Applications in Planning & Design	~				X	~
LSA 326	Landscape Architectural Design Studio I			Х			Х
LSA 327	Landscape Architectural Design Studio II			Х			Х
LSA 333	Plants Materials	X					
LSA 342	Landscape Architectural Construction Technology	*	X				
LSA 343	Landscape Architectural Design Studio III	×		X			x
LSA 423	Landscape Archtectural Design Studio IV	x		X			X
LSA 424	Preparation of Off-Campus Design Thesis Studio	Х					
LSA 425	Orientation for Off-Campus Design Thesis Studio	X					
LSA 433	Planting Design & Practice	X					
LSA 451	Professional Practice in Landscape. Architecture	×		X			x
LSA 458	Off-Campus Design Thesis Studio: Faculty Advisor Visit, Weekly Reports & Field Studies	X	Х	X	X	Х	X
LSA 459	Off Campus Design Thesis Studio: Design Journal & Project Notebook	Х	Х	Х	Х	Х	Х
LSA 460	Off-Campus Design Thesis Studio: Thesis Project	X	X	X	X	X	Х
LSA 461	Off-Campus Final Presentation Seminar	X	X	X	X	X	X
LSA 470	Seminar in Urban Design	¥		Y		¥	Y
LSA 481	Cultural Landscape Preservation	x		X		x	X
LSA 495	Undergraduate Experience in College Teaching						
LSA 496	Special Topics in Landscape Architecture						
LSA 498	Introductory Research Problem	X	X	X	X	X	X
MCR 480	Fundamentals of Microscopy	x					
MCR 484	Scanning Electron Microscopy	X					
MCR 485	Transmission Electron Microscopy	Х					
PSE 132	Introduction to Process Engineering I	Х					
PSE 133	Introduction to Process Engineering II	X					
PSE 200	The Art & Early Histony of Papermaking	×				¥	Y
PSE 202	Pulp & Paper Laboratory Skills	x				~	~
PSE 223	Introduction to Lingocellulosics	Х					
PSE 296	Special Topics in Engineering						
PSE 304	Professional Experience/Synthesis	X	X	X	X	X	X
PSE 305	Fiber Processing	×		Λ			^
PSE 351	Pulping & Bleaching Laboratory Skills	x					
PSE 361	Engineering Thermodynamics	Х					
PSE 370	Principles of Mass & Energy Balance	X					
PSE 371	Fluid Mechanics	×					
PSE 437	Equipment Troubleshooting & Maintenance	Ŷ		X			Х
PSE 438	Biorenewable Fibrous & Non-fibrous Products	X					
PSE 450	Pulping & Bleaching Processes	Х					
PSE 456	Management in Industry	×.		Х		X	Х
PSE 465 PSE 466	Fiber & Paper Properties	×					
PSE 467	Papermakign Wet End Chemistry	X					
PSE 468	Papermaking Processes	X					
PSE 469	Functional & Nano Additives	Х					
PSE 477	Process Control	X					
PSE 480 PSE 481	Engineering Design Economics	×					
PSE 492	Research Practice	A					
PSE 496	Special Topics						
PSE 498	Research Problem	Х	X	Х	Х	Х	Х
RMS 200	Renewable Materials & Composites from Lignocellulosics						
SRE 225	Physics of Energy						
SRF 325	Energy Systems						
SRE 335	Renewable Energy						
SRE 416	Sustainable Energy Policy						
SRE 417	Energy Resource Assessment						
SRE 419	Energy Policy Assessment Methodologies						
SRE 441	Biomass Energy						
SRE 450	Renewable Energy Capstone Planning						
SRE 454	Renewable Energy Finance & Analysis						
SRE 479	Life Cycle Assessment	~	×	v	v	×	v
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# **Appendix C: Assessment: Program Four Column**

# Program (EFB) - Conservation Biology BS

Program Learning Outcomes	Measurement Scale	Results	Actions
Goals of Conservation Biology 09-12- Articulate the goals of conservation biology, that is, to maintain biological diversity in all its expressions. Outcome Status: Active Action Year(s): 2009-2010, 2010- 2011, 2011 - 2012	Exam/Quiz - In Course - >3.3 - Exceeds Standard 1.8 - 3.3 - Meets Standard 0.5 - 1.8 - Approaches Standard <0.5 - Does Not Meet Standard Target: 80% of students will meet or exceed expectations (>0.8) Rubric: No rubric used How Assessed: Distribution of student grades on embedded exam questions in EFB 413 (Intro. Conservation Biology).	Reporting Period: 2014 - 2015 Target Met: Evaluation - Did Not MeetTarget 60% of students meet or exceed expectations (09/09/2016)	Action: Renewed focus within coursework of Introduction to Conservation Biology to emphasize the goals and objectives of the discipline of conservation biology. (09/09/2016) Follow-Up: Coordinate content and courses with other faculty engaged in teaching courses typically taken by undergrads in the major to improve student command of conservation biology principles. (09/12/2016)
	Course Assignment - >3.3 - Exceeds Standard 1.8 - 3.3 - Meets Standard 0.5 - 1.8 - Approaches Standard <0.5 - Does Not Meet Standard Target: 80% of students meet or exceed expectation s(>1.8) Rubric: No rubric used How Assessed: Distribution of student grades on relevant exercise modules in EFB 419.	Reporting Period: 2014 - 2015 Target Met: Evaluation - Did Not MeetTarget 56% of students meet or exceed expectations. (09/09/2016)	Action: Renewed focus within the coursework of Introduction to Conservation Biology to emphasize the goals and objectives of the discipline of conservation biology. (09/09/2016) Follow-Up: Increased communication between faculty delivering lower division courses and faculty delivering upper division/electives so that higher level courses function to reinforce concepts from introductory/lower

# division coursework. (09/12/2016)

**Follow-Up:** Content overlap between courses needs to be addressed so that repetition is minimized. Better faculty coordination will allow more synergy between the core courses and related electives. (09/12/2016)

### Action: Greater emphasis on defining biodiversity in EFB413, particularly its genetic and evolutionary basis (09/12/2016) Follow-Up: Develop an introductory seminar in conservation biology for freshmen to provide an early introduction to some of the core learning objectives in the major, allowing for more reiteration and expansion of the ideas as the student progresses through the program. (09/12/2016)

### Action: Greater emphasis on

defining biodiversity in EFB 419, particularly its genetic and evolutionary basis. Recognition that the utility of averaging conservation biology grades across a disparate set of directed electives is an imprecise instrument for gauging student learning and that overall course grades mask knowledge of key taxonomic groups. (09/12/2016) **Follow-Up:** Development of a

### Concepts of Biodiversity 09-12 -

Describe the concept of biodiversity and its key component concepts of taxonomy, ecology, genetics, geography, and evolution. **Outcome Status:** Active **Action Year(s):** 2009-2010, 2010-2011, 2011 - 2012 Exam/Quiz - In Course - >3.3 -Exceeds Standard 1.8 - 3.3 - Meets Standard 0.5 - 1.8 - Approaches Standard <0.5 - Does Not Meet Standard Target: 80% of students meet or exceed expectations Rubric: No rubric used How Assessed: Distribution of student grades on embedded EFB413 exam questions.

**Reporting Period:** 2014 - 2015 **Target Met:** Evaluation - Did Not MeetTarget 61% of students met standard (09/12/2016)

#### Course Grade - >3.3 - Exceeds Standard

1.8 - 3.3 - Meets Standard
0.5 - 1.8 - Approaches Standard
<0.5 - Does Not Meet Standard</li>
Target: 80% of students will meet or exceed expectations.
Rubric: No rubric used
How Assessed: Average grade
distribution of Conservation Biology
students on Organismal Diversity
electives.

#### **Reporting Period:** 2014 - 2015 **Target Met:** Evaluation - Did Not MeetTarget 61% of students met standard (09/12/2016)

			"field test" to be administered to incoming freshmen and departing seniors that will enable measuring learning gains as students progress through the major, monitoring changes in student achievement over time, and identifying more clearly areas of adequacy and deficiency for targeting improvements in teaching and mentoring. (09/12/2016)
Importance of Biological Diversity 09-12 - Explain why biological diversity is important, that is, nature?s intrinsic and instrumental Outcome Status: Active Action Year(s): 2009-2010, 2010- 2011, 2011 - 2012	Exam/Quiz - In Course - >3.3 - Exceeds Standard 1.8 - 3.3 - Meets Standard 0.5 - 1.8 - Approaches Standard <0.5 - Does Not Meet Standard Target: 80% of students will meet or exceed expectations (>1.8 on 0-4 scale) Rubric: No rubric used How Assessed: Distribution of student grades on embedded EFB 413 exam questions.	<b>Reporting Period:</b> 2014 - 2015 <b>Target Met:</b> Evaluation - Did Not MeetTarget 60% of student met the standard. (09/12/2016)	Action: Increasing emphasis on the definition of the diverse values of biodiversity in EFB 413. Component will receive greater emphasis in all core and elective diversity courses so that the core conservation courses are reinforcing and expanding the idea instead of introducing the concept. (09/12/2016)
	Course Assignment - >3.3 - Exceeds Standard 1.8 - 3.3 - Meets Standard 0.5 - 1.8 - Approaches Standard <0.5 - Does Not Meet Standard Target: 80% of students will meet or exceed expectations (>1.8 on 0-4 scale) Rubric: No rubric used How Assessed: Distribution of student grades on relevant EFB 419 exercise modules.	<b>Reporting Period:</b> 2014 - 2015 <b>Target Met:</b> Evaluation - Did Not MeetTarget 61% of students met standard (09/12/2016)	Action: To address deficits in student learning there will be increased emphasis on the definition of the diverse values of biodiversity on EFB 419 and design of more accurate/precise metrics for deployment in field tests for incoming freshman and departing seniors given concerns that analysis of final grades does not adequately reflect the state of student learning. We will incorporate specific questions

regarding this learning objective

into an exit exam so that we have an additional tool for independently assessing student learning and retention. (09/12/2016)

Threats to Biological Diversity 09-12- Describe the threats to biological diversity, that is, direct harvesting, habitat destruction, and introduction of non-native species, among others, and their interactions. Outcome Status: Active Action Year(s): 2009-2010, 2010- 2011, 2011 - 2012	Exam/Quiz - In Course - >3.3 - Exceeds Standard 1.8 - 3.3 - Meets Standard 0.5 - 1.8 - Approaches Standard <0.5 - Does Not Meet Standard Target: 80% of students meet or exceed standard Rubric: No rubric used How Assessed: Distribution of student grads on embedded exam questions on EFB 413 final exam.	<b>Reporting Period:</b> 2014 - 2015 <b>Target Met:</b> Evaluation - Did Not MeetTarget 56% of student meet or exceed standard. (09/12/2016)	Action: Covering threats to biodiversity in more detail in EFB 413. Awaiting insights from more accurate/precise metrics being developed for field tests to be administered to incoming freshmen and departing seniors. (09/12/2016)	
	Course Assignment - >3.3 - Exceeds Standard 1.8 - 3.3 - Meets Standard 0.5 - 1.8 - Approaches Standard <0.5 - Does Not Meet Standard Target: 80% of students meet or exceed standard Rubric: No rubric used How Assessed: Distribution of student grades on relevant exercise modules in EFB 419.	<b>Reporting Period:</b> 2014 - 2015 <b>Target Met:</b> Evaluation - Did Not MeetTarget 52% of students meet or exceed standard. (09/12/2016)	Action: Added a new module to EFB 419 that covers threats to biodiversity in more detail. Awaiting insights from more accurate/precise metrics being developed for field tests to be administered to incoming freshmen and departing seniors. (09/12/2016)	
<b>Competency of Tools 09-12 -</b> Be effective as a conservation biology professional by having mastered basic competencies: natural history broadly speaking, field methods, quantitative assessment and data analysis, taxonomic expertise in at least one major group of organisms, written and oral communication in technical-,	Course Assignment - >3.3 - Exceeds Standard 1.8 - 3.3 - Meets Standard 0.5 - 1.8 - Approaches Standard <0.5 - Does Not Meet Standard Target: 80% of students meet or exceed standard Rubric: No rubric used How Assessed: Distribution of	<b>Reporting Period:</b> 2014 - 2015 <b>Target Met:</b> Evaluation - Did Not MeetTarget 51% of students met or exceeded standard (09/12/2016)	Action: Increasing emphasis on context-appropriate management actions as well as awaiting insights from more accurate and precise metrics we are developing for field tests to be administered to incoming freshmen and departing seniors. (09/12/2016) Follow-Up: Build identity within	

popular- and policy-specificgenres, student grads in relevant EFB 419

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the major and emphasize early

familiarity with relevant policy, law modules. and government at local, regional, national and international levels, ability to critique of evidence/research products/proposals/work plans/budgets, and awareness of issues of professional conduct and ethics. Specify context appropriate actions needed to protect and restore biological diversity, that is, endangered species recovery, designating ecological reserves, ecosystem restoration, captive breeding, population management, invasive species management,

interfacing with the policy-making process, educating others, and combinations thereof. Outcome Status: Active Action Year(s): 2009-2010, 2010-2011, 2011 - 2012

Suggest appropriate actions to conserve biodiversity 09-12 - Beable Standard to identify and implement conceptually actions that are appropriate to mitigate particular threats to biological diversity in a diverse set of contexts including social, political and biological ones as well as combinations of them. Be an effective conservation biology professional by having mastered basic internships/research. competencies: natural history broadly speaking; field methods; quantitative assessment and data analysis; taxonomic expertise in at least one major group of organisms; written and oral communication intechnical-,

Final Project - >3.3 - Exceeds 1.8 - 3.3 - Meets Standard 0.5 - 1.8 - Approaches Standard <0.5 - Does Not Meet Standard Target: 80% of students meet or exceed standard Rubric: No rubric used How Assessed: Distribution of performance assessments for student

Reporting Period: 2014 - 2015 Target Met: Evaluation - Did Not MeetTarget 60% of students meet or exceed standard (09/12/2016)

professional expectations and the mechanics and skills needed to successfully navigate through the major and ultimately secure a professional opportunity in the field. (09/12/2016)

Action: Added more role playing exercises to EFB 419 to create an opportunity for students to learn to excel at communication. EFB 414 also emphasizes this learning area to a greater degree. (09/12/2016)

Action: Developing more useful metrics for the field tests to be administered to incoming freshmen and departing seniors that specifically measure natural history and taxonomic expertise, written and oral communication. legal, policy, and administrative aspects of conservation biology, and professional ethics and

popular-, and policy-specific genres; familiarity with relevant policy, law, and government at local, regional, national, and international levels; ability to critique evidence/research/products/proposal s/work plans/budgets; and awareness of issues of professional conduct and ethics.

Outcome Status: Active Action Year(s): 2009-2010, 2010-2011, 2011 - 2012

> Capstone Assignment/Project ->3.3 - Exceeds Standard 1.8 - 3.3 - Meets Standard 0.5 - 1.8 - Approaches Standard <0.5 - Does Not Meet Standard Target: 80% of students meet or exceed standard Rubric: No rubric used How Assessed: Distribution of grades on EFB 414 Capstone project.

Reporting Period: 2014 - 2015 Target Met: Evaluation - Did Not MeetTarget 60% of students met or exceeded standard (09/12/2016) conduct. Field test outcomes will guide specifically which aspects most need to be addressed through curriculum revision. (09/12/2016)

**Follow-Up:** Build identity within the major and emphasize early professional expectations and the mechanics and skills needed to successfully navigate through the major and ultimately secure a professional opportunity in the field. (09/12/2016)

Action: Developing more useful metrics for the field tests to be administered to incoming freshmen and departing seniors that specifically measure natural history and taxonomic expertise, written and oral communication, legal, policy, and administrative aspects of conservation biology, and professional ethics and conduct. Field test outcomes will guide specifically which aspects most need to be addressed through curriculum revision. (09/12/2016)