RECORD OF ACADEMIC ACHIEVEMENT

The Evergreen State College - Olympia, Washington 98505

OFFICIAL TRANSCRIPT DOCUMENT

Holmes, Samantha Jo — A00423438

Last, First Middle — Student ID

CREDENTIALS CONFERRED:

Bachelor of Science — Awarded 14 Jun 2024

EVERGREEN UNDERGRADUATE CREDIT:

Start	End	Credits	Title
09/2020	06/2021	44	**Integrated Natural Sciences** *4 - General Biology: Evolution and Ecology* *5 - General Biology: Molecular and Cellular Biology* *3 - General Biology: Animal Physiology* *3 - General Biology: Biodiversity* *3 - General Biology Laboratory* *16 - General Chemistry I, II, and III with Laboratory* *4 - Statistics I* *2 - Field Techniques and Scientific Communication* *2 - Foundations of College Success* *2 - Applied Math: Problem Solving Skills and Scientific Communication*
09/2021	03/2022	32	**Environmental Biology and Chemistry** **11 - Organic Chemistry I and II with Laboratory* **4 - Organic Chemistry: Instrumentation and Spectroscopy* **5 - Microbial Ecology with Laboratory* **4 - General Microbiology with Laboratory* **3 - Environmental Microbiology with Laboratory* **3 - Biogeochemistry and Bioremediation with Field Methods* **2 - Environmental Chemistry*
03/2022	06/2022	16	**Practice of Organic Farming** *3 - Soil Science* *3 - Plant Science* *6 - Farm Internship* *2 - Group Project* *2 - Agrosynthesis*
09/2022	03/2023	32	**The Fungal Kingdom** **8 - Fungal Biology and Ecology* **6 - Lichen Biology and Ecology* **6 - Lichen Taxonomy* **6 - Fungal Taxonomy* **2 - Research Seminar in Mycology* **4 - Independent Project: Fungal Bioinformatics*
04/2023	06/2023	12	**Field Plant Taxonomy and Biodiversity Conservation** **4 - Bryophyte Taxonomy* *4 - Field Plant Taxonomy* **4 - Principles of Ecological Restoration*
09/2023	12/2023	12	**Native Pathways Program: Settler Colonialism Across North America** *6 - Native American and Indigenous Studies* *3 - History* *3 - Research and Writing*

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EVERGREEN UNDERGRADUATE CREDIT:

Start	End	Credits	Title
01/2024	06/2024	32	**Thinking in Indian: Democracy, Civic Engagement, and Resistance** *4 - Indigenous Contemporary Issues* *4 - Social Work: National Indian Child Welfare Association* *4 - Critical Thinking* *4 - Reclaiming Indigenous Art* *16 - Independent Project (Para-Professional)*

Cumulative

180 Total Undergraduate Credits Earned

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My path and journey through my years at The Evergreen State College has opened my mind, deepened my passion and understanding of the natural world and ecology, and given me a purpose that I had been longing for. Learning with like-minded as well as diverse individuals has strengthened and widened the community I exist within. My ability to critically think outside of the box I was raised in has shifted many false narratives and perspectives that had my thought process caged and limited. I am grateful for each and every experience that was shared with me at Evergreen. I was empowered and inspired by several strong and brilliant female professors. My first experience with a strong, female role model was here at Evergreen. It gave me hope and reassurance that I was capable of pursuing higher education, to have and follow extraordinary dreams for a purposeful, challenging career path.

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January 2024 - June 2024: Thinking in Indian: Democracy, Civic Engagement, and Resistance

32 Credits

DESCRIPTION:
Faculty: Gary Peterson, MSW; Yvonne Peterson, MA

Students in the *Thinking in Indian: Democracy, Civic Engagement, Resistance* program committed to building a learning community to study Tribes in the State of Washington, Indigenous activism, and move to praxis regarding their scholarly research and writing. An academic focus of study prepared students for the scholarship of John Mohawk and historical issues impacting Tribes across the United States by posing essential questions to understand the current state of the world and how to survive as both individuals and as peoples. We studied United States history, and regional histories of the United States in terms of the doctrine of discovery, sovereignty, self-governance, land and economics, education and socialization of children, and liberation theory. Using the river of culture timeline as a template highlighting laws and policies impacting the lived experience of American Indians, students conducted research by proposing an independent project connected to the themes of sovereignty, democracy, civic engagement, resistance, Iroquois Confederacy Laws, and food sovereignty. Students posed and responded to essential questions about issues that continue to deprive American Indians of land, economic opportunities, treaty rights, natural resources, religious freedom, culturally relevant education, and access and protection of sacred sites and resources.

Winter quarter, students worked collaborative to study Tribes in Washington State (Treaty/Executive Order/Non-federally Recognized, resources, governance, ceded territory, and issues facing Tribes), supported each other's art projects, and planned the Generations Rising: Tribal Youth/Make Art Day concluding the quarter's civic engagement and volunteerism projects. Students attended Stokley Towles' writing lab, wrote poetry and weekly summaries, wrote grants and scholarship applications, researched/ presented an independent study, committed to a sit spot observation, and attended events on campus to extend their study of the program theme. Several students attended the Boldt at 50 panel and a presentation by Joy Harjo at the Town House Meetings in Seattle. Students attended the Hazel Pete Institute of Chehalis Basketry "weavers teaching weavers" event at the Chehalis Community Center and attended an Awl/Sheath workshop with Lindsey Howtopat, a Yakama Traditional Artist. Several students opted to job shadow at tribal centers in the area, volunteered with non-profit gardens and gathered first foods for Indian Tribes, committed to practicums and volunteering in K-6 classrooms, prepped for the LSAT, and/or worked and studied to be competitive for international sports competition.

Selected articles included: River of Culture History Timeline Template, Seattle Times Indigenous articles/ letters to the editor/Pacific NW, MLK's Letter from Birmingham Jail, Chief Seattle Speech 1854 Oration- The Suquamish Tribe, OSPI "From Boarding Schools to Self-Determination (Dr. Willard Bill), Levi Rickert's Native News Online and specifically "US Presidents in Their Own Words Concerning American Indians". Documentaries included the

Institute for the Development of Indian Law "Treaties" and "Sovereignty" and UW Native Voices "Half of Anything". Students meeting prerequisites for social work and K-12 teaching read additional texts including the on-line module for the ICW Act, James Banks titles for multicultural education topics, and the Common Core Standards for grades K-12. Speakers included: Liza Rognas, Library Research Tips; and Stokley Towles – Writing Prompts.

Spring quarter, students engaged with the public in various capacities to practice cross-cultural communication, civic engagement, and resistance. Students attended as volunteers and presenters the National Indian Child Welfare Association annual conference in Seattle, Washington. The formal presentations included Coyote Cast of Characters (interactive theater), Chehalis Basketry, and The River

of Culture. Over 2000 attendees allowed for numerous conversations and opportunities for students to extend their learning from the program. Over the quarter, students travelled to the Virgin Islands, Indonesia, Brazil, Ireland, Turkey, Greece, and Canada as part of their independent projects and to attend workshops for career development. Several students attended the Affiliated Tribes of Northwest Indians conference, Vine Deloria, Jr. Symposium, tribal council meetings, workshops on current issues facing Indian Tribes, and presentations relevant to the topic of resistance.

Students extended their art skill sets by teaching cultural arts at WaHeLut Indian School (K-8) and taught beginner art skill sets at the Hazel Pete Weavers Teaching Weavers gathering. Students brainstormed for fund raising activities (to attend the 2025 NICWA conference) and strengthened their art skills by vending at the TESC Native Arts Fair. Students gathered and processed cedar (limbs, bark, roots) to fully understand the process of weaving baskets. Students gathered other domesticated plants and limbs to experiment with basketry materials. While on field trips students wrapped up their sit spot observations for the year.

Independent project presentations covered a range of topics, travels, and ethnographic interviewing over the year. Presentations summarized the job shadow opportunities at tribal centers in the area, the volunteer stints with non-profit gardens and coming to know the first foods for Indian Tribes, practicums and volunteering in K-6 classrooms, and work/training to be competitive for international sports competition.

Selected articles included: current issues highlighted from Native News Online hosted by Levi Reichert; Native American Law360 hosted by Law360, New York, NY; the news magazine – Indian Country Today; and student self-identified articles and books.

EVALUATION:
Written by: Yvonne Peterson, MA

Samantha Holmes was successful in the Thinking in Indian: Democracy, Civic Engagement, Resistance program at an academic level and at a personal level. Her success attests to her critical thinking skills for acquiring information about colonialism and assimilation and then acting upon the information to move to praxis, begin to trust her own integrity and insights around these topics, and to further develop her teaching skills within public schools. Cross-cultural communication skills and academic knowledge will position her well as she continues to seek course work that moves her to a goal of combining her interest in science, climate and environmental justice, teaching, and social work into a career.

In class Samantha was always prepared for discussions, presentations, and collaborative work. She always brought forward background information about contemporary Indigenous issues she was tracking especially issues involving the environmental justice and food systems. She was willing to share her life story and was embraced by the learning community. She often shared summaries of books she had read in the past and the ones she selected for this program – Samantha is a scholar.

Samantha experienced art, making several baskets, leather pouches, and joined the program's reader's theater called Coyote Cast of Characters. She attended the National Indian Child Welfare Association conference serving as a helper in the basketry and Indigenous arts sessions, and helped prompt actors while they presented the program's thematic play answering the question – What led to the passage of the Indian Child Welfare Act?

Samantha proposed a job shadow experience that evolved into a research project by taking a job teaching life skills at Nisqually Middle School. To expand the experience, Samantha coached track during spring quarter. A successful way to wrap up her senior year at Evergreen!

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Samantha met all aspects of our program by participating in governance on campus and in the Olympia community, volunteering and helping with youth projects in the program and for Tribal youth during the year and representing the program at the National Indian Child Welfare Association conference in Seattle, Washington. Overall, a significant year for Samantha Holmes. She met all expectations for the program and was considered by her peers to be an important member of the learning community and a leader. The following credit equivalencies are designed to represent her excellent scholarship. She exits Thinking in Indian: Democracy, Civic Engagement, Resistance in good standing.

SUGGESTED COURSE EQUIVALENCIES (in quarter hours) TOTAL: 32

4 - Indigenous Contemporary Issues
4 - Social Work: National Indian Child Welfare Association
4 - Critical Thinking
4 - Reclaiming Indigenous Art
16 - Independent Project (Para-Professional)

Holmes, Samantha Jo — A00423438
Last, First Middle — Student ID

September 2023 - December 2023: Native Pathways Program: Settler Colonialism Across North America

12 Credits

DESCRIPTION:
Faculty: Kyle Pittman, MPA, Dawn Barron, MFA, Corey Larson, Ph.D.

In the *NPP: Settler Colonialism Across North America*, students engaged with the concept, theories, practice, and impacts of settler colonialism across North America, explored and compared/contrasted Western and Indigenous ways of knowing and being, and examined the big picture perspective of settler colonialism down to the smaller, place-based perspective, through an Indigenous lens. Historian and author, Patrick Wolfe, said that “settler colonizers come to stay: invasion is a structure not an event.” This idea that settler colonialization is a structure and not a singular event or series of events, provided the grounding for our work in this program. Settler colonialism permeates all ways of living in North America and is often visible within the systems we engage with but, more than often, is an insidious, quasi-subliminal entity that infiltrates even the most acknowledged and mindful. Alicia Cox in the article "Settler Colonialism" introduces it as "an ongoing system of power that perpetuates the genocide and repression of indigenous peoples and cultures. Essentially hegemonic in scope, settler colonialism normalizes the continuous settler occupation, exploiting lands and resources to which indigenous peoples have genealogical relationships. Settler colonialism includes interlocking forms of oppression, including racism, white supremacy, heteropatriarchy, and capitalism" (2017). This program looked back at the land-base of North America (including Canada and Mexico) and traced the lines of invasion by answering the following: who invaded, where did they invade, who was originally at the invasion site, when (dates) did the invasion take place, what was the outcome initially and what happened to the original peoples and the land? By using the medicine wheel teaching method and guiding principles of spirit, body, mind (intellect), and heart (emotion), students created a supportive, open-minded, and engaging learning community where all modes of inquiry are examined with respect and thoughtfulness. Students defined and demonstrated understanding of Indigenous and Western Research Methodologies and Methods noting when to use, how to use, and why to use and practiced through developing a researched narrative, written and visually presented, that expanded upon a chosen research question/topic and geographical area. Students developed a multi-faceted, multi-layered timeline project of historical "invasions" during the settler colonization of North America as well as placements of Indigenous ancestral, familial, cultural, and other important dates. Weekly Discussion posts, assigned reading or video reflections, four rhetorical precis, an annotated bibliography, a research scaffold/proposal (traditional or innovative), and a critical analysis research project were completed and turned in as a final portfolio.

EVALUATION:
Written by: Kyle Pittman, MPA

Samantha Holmes, who goes by Sam, fulfilled the learning objectives and outcomes for this program and was a strong student, having been present for nearly all class days and attentive during learning sessions. Sam participated fully with the learning community by offering insightful contributions during the weekly seminar discussions, making inquiries after lecture presentations to expand on the topic at hand, and engaging in class activities focused on the application of course content. Sam was successful in completing nearly all the course assignments, particularly succeeding at collaborative group work with others such as during seminar discussions and applying faculty feedback on assignments.

Sam also completed a portfolio of work containing responses to free write prompts dealing with various aspects of the program theme, reflection papers on the reading materials and weekend class participation, lecture and seminar notes, a glossary of terms related to Native American studies and

settler colonialism, summaries of readings in a rhetorical precis format, annotated course materials, and a visual essay presentation consisting of at least ten images. Additionally, Sam submitted a strong final research paper styled in APA 7 titled, “The Effects of Settler Colonialism on the Stewardship of the South Sound Prairies,” which looked at the impact of settler colonialism on the physical landscape and how it was altered when Indigenous stewardship was curtailed by colonial forces; this entailed completing a research proposal, source review, outline, and first draft. This portfolio represents a strong mastery of the program outcomes.

Notably, Sam routinely asked relevant and interesting questions during seminar discussions to tease out further information about the concepts under consideration as some of the topics were newly presented to them. This had a positive effect on the class by making the space more welcoming and inviting for further discussion, a facet that other students appreciated.

Sam partially attended two of the three scheduled weekend intensive class sessions during the quarter. During the first session, Sam participated in orientation workshops that included learning about library resources, the value of a liberal arts education, and how to build community through an Indigenous methodology known as the Medicine Wheel. In the third session, Sam witnessed presentations around food sovereignty and the importance of traditional foods for Indigenous Peoples. Over each of these sessions, Sam also contributed to a group project to develop a story map or timeline presentation that depicted specific events or happenings related to settler colonialism. In particular, Sam introduced the project that used the Medicine Wheel framework to explain the story of Thanksgiving, reciting a timeline of events that led to its inception as the contemporary holiday.

Overall, Sam performed very well during this program. It is evident that Sam takes their education seriously and always strived to incorporate feedback from faculty and peers to progress in their learning.

SUGGESTED COURSE EQUIVALENCIES (in quarter hours) TOTAL: 12

6 - Native American and Indigenous Studies
3 - History
3 - Research and Writing

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April 2023 - June 2023: Field Plant Taxonomy and Biodiversity Conservation

12 Credits

DESCRIPTION:
Faculty: Frederica Bowcutt, Ph.D. and Lalita Calabria, Ph.D.

In this upper division program students cultivated floristic skills. Students attended lectures, labs, workshops, and seminar discussions as well as in-person field exercises. Their understanding was assessed through field and lab assignments, quizzes, exams, and response papers to assigned readings. Plant identification skill building was a significant focus of the program. Students learned to use dichotomous keys to identify unknown vascular and non-vascular plant specimens using microscopes. For labs, they used Hitchcock and Cronquist, *Flora of the Pacific Northwest* and McCune and Hutten, *Common Mosses of Oregon and Washington*. Using Simpson, *Plant Systematics*, students also studied diagnostic characters of common vascular plant families. They received instructions in the collection and preparation of herbarium specimens and learned about the importance of herbaria to biodiversity studies. Applying their new floristics skills, students also studied topics in ecology and conservation with an emphasis on temperate forests and camas prairies. In support of this content, students attended two field trips and read Glime's *Bryophyte Ecology* and various scientific journal articles.

For the seminars and lectures focused on ecological restoration, students read all or part of the following texts: Holl, *Primer of Ecological Restoration*; Apostol and Sinclair (eds.), *Restoring the Pacific Northwest*; Bowcutt and Hamman (eds.), *Vascular Plants of the South Sound Prairies*; Martin, *Wild by Design: The Rise of Ecological Restoration*; and multiple journal articles. In response to the reading assignments, discussions, and associated lectures, students wrote short essays that summarized key concepts. Providing examples from local restoration efforts, they also synthesized the program material in a final assignment and considered how ecological restoration can contribute to biodiversity conservation.

EVALUATION:
Written by: Frederica Bowcutt, Ph.D. and Lalita Calabria, Ph.D.

Samantha (Sam) was an engaged student who participated actively in our learning community. In the vascular plant taxonomy portion of the program, she demonstrated an outstanding ability to use a technical dichotomous key to identify unknown vascular plants based on their lab notebook, quizzes, and final exam. Based on her perfect final exam, Sam can sight recognize fifty common western Washington plants using correct scientific nomenclature including binomials and family names. She made excellent use of her field journal to document field observations and cultivate her sight recognition skills. Sam produced twenty-three vascular plant species monographs that effectively convey morphological information. On her prairie restoration quiz, Sam explored how geology, climate, and cultural factors influence vegetation patterns. Drawing from her field observations, the assigned scientific articles, and other high-quality sources from the scientific literature, Sam crafted good explanations of causal relationships.

Sam's detailed answers on the weekly study questions and performance on the quizzes indicated an excellent understanding of bryophyte ecology and conservation topics. Sam's bryophyte identification notebook was excellent and reflected a developing understanding of field collection methods, morphological features, and microscopic identification of bryophytes. Sam's keying quizzes further demonstrated a solid grasp of morphological terminology and using dichotomous keys to identify an unknown bryophyte species. On the final sight identification exam, Sam demonstrated an excellent ability to identify 25 bryophytes species using scientific names. It was clear that Sam invested a great deal of time and effort into this portion of the program.

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Sam wrote four good responses to the ecological restoration reading assignments. She developed an understanding of the relevance of reference models, stakeholder involvement, careful planning, adaptive management, and ongoing monitoring to restoration work. Sam also demonstrated familiarity with key terms. Using various Pacific Northwest case studies as examples, she identified key steps necessary for successful project outcomes as well as common causes of poor results. In her final synthesis assignment, Sam skillfully considered how partnering with Indigenous peoples can enhance biodiversity conservation while addressing important environmental justice issues. She also addressed some of the challenges to incorporating Indigenous traditional ecological knowledge into ecological restoration projects. Her written assignments reflected good critical thinking and expository writing skills. Overall, Sam is well prepared for continued, advanced work in plant sciences.

SUGGESTED COURSE EQUIVALENCIES (in quarter hours) TOTAL: 12

*4 - Bryophyte Taxonomy
4 - Field Plant Taxonomy
*4 - Principles of Ecological Restoration

* indicates upper-division science credit

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September 2022 - March 2023: The Fungal Kingdom

32 Credits

DESCRIPTION:
Faculty: Lalita Calabria, Ph.D. and Paul Przybylowicz, Ph.D.

The Fungal Kingdom was a two-quarter, junior/senior program focused on the taxonomy, physiology and ecology of fungi, with an emphasis on Pacific Northwest fungi and lichens. There were both 16- and 12-credit options available in both quarters. The major learning objectives were to: 1) develop a detailed understanding of the biology, ecology, and taxonomy of lichens and fungi; 2) become proficient using field and lab methods for mushroom and lichen collection and identification, including dichotomous keys, molecular systematics, and chemical testing; 3) demonstrate the ability to recognize the common fungi and lichen species of the PNW; and 4) to develop scientific literacy, critical thinking and research skills, as well as science communication skills. Students' understanding was assessed through weekly study questions, several quarter-long projects, seminars, participation and two exams in the fall and biweekly quizzes in the winter. Each major component of the program is described below.

The text for fungal biology and physiology was *21st Century Guidebook to the Fungi,* 2nd Edition by Moore, Robson and Trinci, along with selected scientific research papers. Lichen lectures were supported by readings from *Lichens of North America* by Brodo, Sharnoff and Sharnoff, a series of essays titled *Ways of Enlichenment* by Goward and a selection of peer-reviewed literature. Topics covered during fall quarter included: lichen biodiversity, evolution and reproduction, fungal diversity and classification, molecular systematics, cell biology, spore production and discharge, genetics, human uses of fungi, and bioinformatics. During winter quarter, the focus was fungal and lichen ecology. Topics covered included: ecophysiology of lichens and fungi, environmental monitoring using lichens, lichen conservation and the ecology of various groups of fungi—pathogens, decay, mycorrhizae, and endophytes.

In fall quarter, field collection and identification skills were a significant focus. Students used dichotomous keys to identify unknown mushroom and lichen specimens and developed fluency in identification terminology. Every student compiled both a lichen and mushroom Identification Notebook which included 12 specimens with detailed descriptions, key characters and photos for each specimen and drawing of key features for several specimens. Field identification skills were further developed using *iNaturalist*, an online citizen science tool to document biodiversity. Weekly observations for both mushrooms and lichens were required. Each student completed a reflective summary of the collective results from the quarter. A sight identification exam tested students' ability to identify local mushrooms and lichens from memory using scientific names.

Weekly research seminars focused on current topics in mycology. Topics covered included bioremediation, radiotrophic fungi and medicinal uses of fungi. Students summarized peer-reviewed articles to inform critical discussions to develop informed perspectives.

During the winter, students further expanded their lichen identification skills through a plot-based forest survey. Students worked in teams to identify all lichens collected and then analyzed class data and presented their results. In addition to macrolichen surveys, students participated in two workshops, one focusing on *Usnea* species and a second on crustose lichen ID.

Students learned molecular and bioinformatic approaches for identifying fungi, including how to extract DNA from both environmental isolates and tissue samples, perform PCR amplification, clean and compare sequence data with sequences in online DNA databases, create a multiple sequence alignment with DNA data, construct a phylogenetic tree and interpret the relationships between different fungal

taxa. Other fungal identification skills covered included culturing and sterile technique, along with compound microscope slide preparation and observation of microscopic fungi.

During winter quarter, 16-credit students completed either an independent research project or a literature review on a particular mycology topic. This work culminated in a written report or paper, along with a public presentation.

EVALUATION:
Written by: Paul Przybylowicz, Ph.D. and Lalita Calabria, Ph.D.

Samantha (Sam) Holmes met all the major learning objectives for this program. Sam attended all the program meetings and submitted all the program work. Overall, the quality of Sam's work was very good and demonstrated a high level of engagement with the program. Sam was very engaged with both the learning and the learning community. She was quick to volunteer both her time and expertise which helped build the learning community.

Sam made significant progress in fungal and lichen biology, ecology and taxonomy. Sam completed all weekly study questions, which indicated a very good understanding of the material covered in lecture and readings. Sam's performance on the quizzes and exams indicated a good understanding of fungal biology with a very good comprehension of the lichen topics. In winter, Sam's quizzes indicated a fair understanding of fungal topics, with a very good comprehension of the lichen topics.

In the taxonomy portion of the program, Sam worked hard in the lab and field to increase her ability to identify mushrooms and lichens. Sam's mushroom and lichen identification notebook had excellent photos, descriptions and specimens that documented important identification details. The specimens were correctly identified and properly prepared. On the final sight identification exam, Sam demonstrated an excellent ability to identify 44 common mushrooms and a very good ability to identify 40 common lichens using scientific names. Overall, Sam showed a a solid grasp of morphological terminology and using dichotomous keys to identify an unknown lichen species.

Sam contributed regularly to the class *iNaturalist* project through weekly observations, comments and detailed notes. It was clear that Sam used this online community science tool to deepen her understanding of the natural history of the PNW.

Sam completed a majority of the seminar response posts which were generally excellent. Sam asked good questions and contributed her thoughts in a supportive manner. As a result, Sam deepened her skills in interpreting primary scientific papers and science media sources from a critical perspective.

Sam contributed to all aspects of the lichen plot research including field sampling, macrolichen identification, data entry and organization. Sam's team did an excellent job of accurately identifying all lichens in their plots. Their summary and analysis of the class data was very good and included a well-defined research question with a graph/table illustrating their results.

Sam demonstrated a solid understanding of fungal identification using molecular tools through participation in fungal DNA isolation and PCR labs. With the resulting DNA sequences, Sam successfully identified their fungal species and constructed an accurate phylogenetic tree representing eight different classes of fungi.

Sam was an engaged participant in fungal diversity and endophyte isolation labs and showed a solid grasp of the microscopy, culturing and sterile technique skills covered. Sam completed all the Excel mushroom farm models. Their final model demonstrated an excellent understanding of both the modeling and the cultivation process.

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Sam's independent research focused on bioinformatic approaches for studying fungal biodiversity conservation. Sam investigated *Hygroybe* species diversity in Washington State using online genetic and natural history databases. Sam also successfully isolated DNA from *Hygrocybe* herbarium specimens which she identified using online DNA databases. Finally, Sam compiled the resulting sequences from these sources and constructed a phylogeny for Washington *Hygrocybe* species. Sam worked hard to refine the research question and implement their project. Their draft papers documented their steady progress. Overall, their paper and final presentation were good and highlighted Sam's passion for studying fungal biodiversity conservation.

Overall, Sam worked hard and made significant progress. She is well prepared for more advanced work in mycology.

SUGGESTED COURSE EQUIVALENCIES (in quarter hours) TOTAL: 32

*8 - Fungal Biology and Ecology
*6 - Lichen Biology and Ecology
*6 - Lichen Taxonomy
*6 - Fungal Taxonomy
*2 - Research Seminar in Mycology
*4 - Independent Project: Fungal Bioinformatics

* indicates upper-division science credit

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Student Self Evaluation for The Fungal Kingdom
09/2022 - 03/2023

While I reflect on my personal growth amid The Fungal Kingdom this last quarter at The Evergreen State College, I am overcome by feelings of accomplishment, joy, hope, and gratitude. I have gained a deeper understanding of who I am as an individual and who I want to become. I have begot relationships and connections with other individuals that have fostered the joy of community and sharing passion in a fascinating, symbiotic subject of science. My ability to persevere and endure challenges has exceeded standards I previously had for myself. I feel now as though there isn't a level or degree to which I am limited in my ability to learn and grow as a member of my community as well as individually. I am confident and competent in a variety of arenas including research, collaboration, applying skills and knowledge, and making mindful choices in my personal life that benefit myself and those around me.

Prior to the time and energy I exuded throughout my time in this program thus far, I understood very little in regards to mycology. I am chronically curious as well as eager to expand my horizons and depth of knowledge concerning the environment and ecology of our world and our role in it. I was slightly cognizant of just how interconnected and interdisciplinary of a science mycology functions as. At this point in my journey I am filled with gratitude to have had the opportunity to further my understanding of how crucial of a role fungi play in our environment and our lives. It produces a sense of relief and hope that there are solutions to a vast array of issues that our species and our planet are enduring.

Fungal Kingdom was the second upper division science program that I have chosen on my path at Evergreen. The experience I amassed throughout my studies in the first upper division science program I completed prepared me for the level of expectations that this program shared with the first one. I might have been overzealous in my ability to perform my job as a student while also trying to maintain patterns and habits that I had already learned weren't conducive to productivity and growth. The time came in week five or six of the program that I knew I had to surrender counterproductive habits and patterns in order to give and receive all that I could from the Fungal Kingdom program, professors and peers. The product of this choice has been life changing. My ability to connect with others, focus on my studies, and achieve the level of work I am ultimately capable of was just on the other side of the door I chose to keep closed. Opening that door will lead to me to a fulfilling and purposeful life and career.

The most rewarding wisdom I have attained in this program is the magnitude of the importance in my ability to think critically and apply that skill to future learning and my personal growth.

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March 2022 - June 2022: Practice of Organic Farming

16 Credits

DESCRIPTION:
Faculty: Angelos Katsanis, Ph.D.

This full-time program places its emphasis on exploring sustainable and organic food production practices throughout an entire growing season in the Pacific Northwest. Students gain experience in theory-to-practice topics ranging from soil science, plant propagation, organic pest management practices and irrigation, to harvest, food processing, creating business plans and overall farm management.

In this first quarter of the program, students received education and training on tools of soil profiling and analysis for nutrients and microbial activity, as well as sampling for soil invertebrates and other organisms, including nematodes and earthworms. Sampling techniques included the use of the USDA Grower's Kit for all of the soil analysis and the Berlese/Bearman funnel systems for sampling soil biota. Students also received introductory training in plant asexual propagation and insect identification.

Students gained hands-on experience by working within an assigned team at the certified Organic Farm of The Evergreen State College twice a week. Students completed farm shifts, chores and led market shifts throughout the quarter.

Students kept field journals, which they used to complete an Agrosynthesis assignment at the end of the quarter. A group research project on a topic relevant to the Organic Farm had iterative assignments: a brief project proposal, 2 rough drafts of the introduction, methods, results and discussion, and a presentation. The final project required both a group presentation and written paper. Other writing assignments included reflections on the seminar books *The Market Gardener, The Lean Farm*, as well as farm publications. Students completed 2 exams throughout the quarter. The program also visited a local farm where students had the opportunity to learn more about management and business perspectives of a flower farm.

Textbooks: *Building Soil for Better Crops: Sustainable Soil Management* (2009). Fred Magdoff, and Harold van Es.

Biology 2e (2018). Mary Ann Clark, Matthew Douglas, and Jung Choi

The Market Gardener (2014). Fortier, Jean-Martin

The Lean Farm (2015). Ben Hartman

EVALUATION:
Written by: Angelos Katsanis, Ph.D.

Samantha Holmes, who goes by Sam, did very well in the program. Her attendance record was very good. Sam was an active participant in seminar. Sam's engagement in their own learning was consistent and good, and her engagement in helping classmates with learning was consistent and strong.

Sam demonstrated an overall very good understanding of the presented concepts in soil and plant sciences. Her performance on the soil and plant science exams was very good.

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Sam was an active participant during work in the field and in the lab. She demonstrated an overall consistently great ability to follow protocols for soil sampling, plant propagation and insect identification. Sam made great use of plant and insect pictorial identification keys.

Sam was part of a group research project that investigated the benefits and management of goats at the Organic Farm. Together with her group, she created a proposal, 2 drafts and a final paper that included the budget and timeline of proposed activities. Sam's overall participation in the project research (spring quarter) was great. In the research, they made substantial contributions to source collection, logistics, paper writing, and slide presentation. The project slideshow incorporated excellent reasoning and demonstrated good use of images.

Our farm manager, Beth Leimbach, had this to say for Sam in regard to the farm internship component of the program:

> "Sam completed all of the on-farm internships, chores shifts, and the 2 required market shifts. Sam communicated and collaborated well with her team. She motivated others, asked relevant questions, and ensured that tasks in her management units were completed accurately."

Sam did very well throughout the program and was ready for more advanced work in the environmental and agricultural sciences.

SUGGESTED COURSE EQUIVALENCIES (in quarter hours) TOTAL: 16

3 - Soil Science
3 - Plant Science
6 - Farm Internship
2 - Group Project
2 - Agrosynthesis

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September 2021 - March 2022: Environmental Biology and Chemistry

32 Credits

DESCRIPTION:
Faculty: Andrew D. Brabban, Ph.D. and Paula Schofield, Ph.D.

Environmental Biology and Chemistry was an interdisciplinary science program that used topics and theoretical concepts within microbiology and organic chemistry to study the natural world and human interaction with it, including anthropogenic pollution. It included upper division organic chemistry, environmental and general microbiology, environmental chemistry, and chemical instrumentation. Although each subject is listed separately, the material was delivered in an integrated manner, approaching many concepts from both biological and chemical perspectives. Each week, students spent 9 hours in lecture and small group problem solving sessions, 7 hours in the laboratory and doing some fieldwork, and 2 hours in seminar discussions. Students were evaluated on the basis of weekly homework assignments, seminar assignments, field and laboratory reports, in-person class activities, and performance on weekly on-line quizzes and regular in-person examinations. Some students elected to take components of this full time program.

Organic Chemistry I and II with Laboratory: In fall quarter, students studied the relationship between the structure and behavior of organic molecules. Specific concepts included chemical bonding, acid-base properties of organic molecules, stereochemistry, nomenclature, electron delocalization and resonance. The chemistry of alkanes, alkenes, and alkynes were examined in detail, and the fundamental mechanism of electrophilic addition was emphasized. The laboratory work introduced common techniques in synthetic organic chemistry, including reflux, extraction, recrystallization, steam and simple distillation. Analytical techniques included thin layer chromatography, melting point analysis, gas chromatography, GC-MS, and infrared spectroscopy. In winter quarter, the chemistry of alkyl halides, carboxylic acids and their derivatives, benzene and its derivatives, aldehydes and ketones, as well as free radical reactions were covered. Emphasis was placed on the mechanisms of nucleophilic substitution and elimination, electrophilic aromatic substitution, nucleophilic acyl substitution, and nucleophilic addition. Thermodynamics and kinetics were highly emphasized as fundamental and guiding principles within each topic. For the winter lab work, in addition to a Grignard synthesis and a green chemistry synthesis of adipic acid, students conducted a 5-week interdisciplinary project to characterize microorganisms in soil via phospholipid fatty acid (PLFA) analysis. Students took soil samples from the Evergreen State College Campus, extracted the phospholipids from the membranes of microorganisms, chemically derivatized them to fatty acid methyl esters (FAMEs), then used GC-MS analysis to identify biomarkers and profile microbial communities. The textbook used was *Organic Chemistry* by Paula Yurkanis Bruice (8th Ed.).

Organic Chemistry: Instrumentation and Spectroscopy: Students gained significant hands-on training through individual and group workshops on the following instruments: FT-IR spectrophotometer, Gas Chromatograph, Gas Chromatograph-Mass Spectrometer, and FT-NMR spectrometer. In addition to learning significant background theory, students learned sample preparation, operation, and analysis of spectra/data for each instrument, and used this knowledge to analyze products from synthetic labs. Students also applied these skills to elucidate the structures of a series of unknown compounds through workshops and homework assignments. In addition, students used a tailored GC-MS method for the separation and analysis of fatty acid methyl ester (FAME) biomarkers to study microbial communities in soil.

General and Environmental Microbiology with Laboratory: This component of the program began by examining the broad variety of microorganisms so far identified, ways of growing microorganisms and measuring growth, the biochemistry of these species and their varying cellular structure. It then progressed to examining the roles microorganisms play in the environment and the broad diversity of

ecosystems they occupy. Specifically, we examined microbial metabolism and biogeochemical cycling at a biochemical level, examining the many modes of aerobic and anaerobic catabolism, such as chemolithotrophy. The laboratory component was structured to teach the basic techniques of microbiology required to safely and precisely manipulate microorganisms, such as aseptic technique, making media and growing cultures. Students learned to work quantitatively with organisms carrying out MPN and dilution series to examine water samples, bacterial and phage replication. Students also used quantitative methods to examine cellular processes such as electron transport, using biochemical assays such as the Hill Reaction. The textbook used was Madigan, M., Martinko, J., Bender, K.S., Buckley, G.H., Sattley, W.M., and Stahl, D.A. *Brock's Biology of Microorganisms* 15/e. New Jersey: Pearson: Benjamin Cummings, 2017.

Microbial Ecology and Bioremediation with Laboratory and Field Methods: Students gained an understanding of the relationships between, and the role of, microorganisms in natural and polluted environments. Course material examined microbial metabolism and biogeochemical cycling, water pollution, toxicology, wastewater treatment, methods of measuring microbial numbers and microbial activity, abiotic and biotic interactions within microbial communities, and bioremediation. Remediation of both organic and inorganic chemicals using active/passive, *in situ/ex situ*, chemical/biological processes including the design and use of wetlands was covered. Lab and field work focused on developing both quantitative and qualitative methods of measuring microbial growth and pollution including DO and BOD_5 assays, MPN, viable and total cell count methods, culture enrichment, soil analysis and genetic methods such as PCR detection of microorganisms in water samples. The textbook used was Madigan, M., Martinko, J., Bender, K.S., Buckley, G.H., Sattley, W.M., and Stahl, D.A. *Brock's Biology of Microorganisms* 15/e. New Jersey: Pearson: Benjamin Cummings, 2017.

Environmental Chemistry: Each week students read primary literature and other texts, and completed detailed homework assignments on each reading. Topics covered included green chemistry, energy use in the USA, biofuels from algae, contaminants of emerging concern, environmental hydrocarbon degradation, and the anthropogenic carbon cycle. Readings were mostly taken from primary literature: *Journal of the American Chemical Society, Bioresource Technology, Chemosphere, Environmental Pollution*; and also other texts: *US Energy Information Administration (EIA) Annual Outlook 2021; epa.gov*.

EVALUATION:
Written by: Andrew D. Brabban, Ph.D. and Paula Schofield, Ph.D.

Samantha (Sam) entered this program to learn advanced concepts, as well as lab and field techniques within biology and chemistry to prepare for a future career in science.

Coursework:
In the organic chemistry component of the program, Sam submitted all assigned work and completed all online and in-person quizzes and exams. Sam's understanding of the material improved significantly over the course of the two quarters; initially, she struggled with the material, but to her credit, she worked hard to improve her understanding. Overall, Sam demonstrated a fairly good grasp of the fundamentals of organic chemistry, specifically, nomenclature, structure-property relationships, stereochemistry, and thermodynamic principles governing molecular structure and reactions. In addition, she showed a fairly good understanding of organic reactions, mechanisms, and multi-step synthetic sequences. As a result, Sam was quite successful in applying her knowledge to solve applied synthetic and mechanistic problems.

Sam has demonstrated a working understanding of both general and environmental microbiology in her examinations this quarter. She was able to solve most of the set qualitative and quantitative problems, including growth, cell quantification and cell morphology and structure. In the environmental component,

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Sam showed a fair understanding of the environmental processes examined in the program, and solved some of the quantitative redox and thermodynamic problems as they relate to the environment. In microbial ecology and bioremediation, Sam showed a good understanding of the theory covered and the ability to apply both quantitative and qualitative methods to measure microbial numbers and activity in the environment. Sam was also able to apply her biogeochemical knowledge to assess polluted sites, and then design the appropriate remediation processes. Sam completed all the online quizzes and homework through both quarters, and these were improved from generally good in fall to very good in winter.

Sam came to seminar discussions prepared, completing assignments on the readings. Her work showed she had a solid understanding of the topics and had read the texts. In addition, Sam was an engaged member of seminar discussions, contributing to the dialogue.

Laboratory and Field Work:
Sam successfully worked with a variety of lab partners, and overall she learned the basic laboratory bench skills and techniques in organic chemistry and microbiology.

Sam worked very well with her group members on all aspects of the interdisciplinary field assessment and lab projects. These included an in-depth study (discharge, dissolved oxygen, conductivity, pH, temperature) of McLane Creek, a rural salmon spawning creek that drains into Eld Inlet of Puget Sound; a BOD5 study of the college campus natural waters; and the examination of ground water flow in reference to petrochemical pollution. Sam's data collection was efficient and thorough, and overall, her group's project reports were highly organized, included detailed site descriptions, the appropriate calculations, tables, and figures. Sam's McLane Creek discharge and water analysis study was excellent. Sam also contributed significantly to the 5-week group project on the characterization of soil microbial communities via phospholipid fatty acid/FAME analysis. Sam's group successfully obtained and characterized numerous FAMEs as microbial biomarkers. Following feedback on a draft report of this work, Sam's group re-wrote the report and submitted an excellent final extensive version. It was extremely organized and detailed, and contained excellent data presentation and analysis.

Chemical Instrumentation and Spectroscopy:
Sam learned the theory and practical application of chemical instrumentation typically used in organic chemistry. Specifically, she learned how to prepare samples, operate, and analyze data from the FT-IR, GC, and GC-MS instruments, and she used these to analyze products from organic syntheses. In addition, Sam and her project group successfully used a tailored GC-MS method for the separation and analysis of FAME biomarkers to study microbial communities in soil.

Sam learned the theory of FT-NMR and successfully analyzed spectra, as evidenced by homework and quiz scores. She also took two hands-on FT-NMR instrumentation training workshops.

SUGGESTED COURSE EQUIVALENCIES (in quarter hours) TOTAL: 32

*11 - Organic Chemistry I and II with Laboratory
*4 - Organic Chemistry: Instrumentation and Spectroscopy
*5 - Microbial Ecology with Laboratory
*4 - General Microbiology with Laboratory
*3 - Environmental Microbiology with Laboratory
*3 - Biogeochemistry and Bioremediation with Field Methods
*2 - Environmental Chemistry

* indicates upper-division science credit

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September 2020 - June 2021: Integrated Natural Sciences

44 Credits

DESCRIPTION:
Faculty: Clarissa Dirks, Ph.D., Carri J. LeRoy, Ph.D., Lydia McKinstry, Ph.D.

Integrated Natural Sciences covered topics in general biology, general chemistry, statistics, and applied math. Students could choose to enroll in all or various combinations of the subject areas. Program work focused on the intersection of these disciplines to develop students' interdisciplinary understanding of the interactions of matter and energy in the natural world, and to develop problem-solving skills directed at understanding natural phenomena. Students used scientific process and reasoning skills and were expected to gain field research experience in designing experiments and analyzing data. Depending on the subject area, evaluations of student achievement were based on: weekly on-line quizzes, on-line examinations, weekly homework assignments, discussion boards, final and practical exams, formal laboratory reports, and engagement and collaborative participation in all program activities.

General Biology: Evolution and Ecology – Lectures and workshops focused on introducing students to the following areas of general biology: chemical evolution, mitosis and meiosis, Mendelian genetics, evolutionary processes, population genetics including Hardy-Weinberg equilibrium, speciation, phylogenies, history of life, introduction to ecology and earth systems, as well as community, population and ecosystem ecology. Assessments were based on weekly homework assignments and weekly quizzes.

Textbook: S. Freeman, *Biological Science*, 6th ed.

General Biology: Molecular and Cell Biology – Lectures and workshops focused on introducing students to the following areas of general biology: structure and function of cells and biomolecules, energy and enzymes, cellular respiration, metabolism, the central dogma of how genes work, gene regulation and genomics. Assessments were based on weekly homework assignments and weekly quizzes.

Textbook: S. Freeman, *Biological Science*, 6th ed.

General Biology: Animal Physiology – Lectures and workshops focused on introducing students to the following areas of general biology: water and electrolyte balance in animals, nutrition, gas exchange, circulation, nervous systems, and reproduction and development. Assessments were based on weekly homework assignments and weekly quizzes.

Textbook: S. Freeman, *Biological Science*, 6th ed.

General Biology: Biodiversity – Lectures and workshops focused on learning about the variety of life on earth by examining bacteria, archaea, green algae and plants, protists, fungi, and animals. To complement this work, students also learned about viruses and the immune system of animals. Assessments were based on weekly homework assignments and weekly quizzes. The culminating experience was an in-depth individual research paper and a group presentation.

Textbook: S. Freeman, *Biological Science*, 6th ed.

General Biology Laboratory – Laboratory investigations were focused on basic microscopy using both dissecting and compound microscopes, observational studies, making solutions and media, microbiology techniques such as working with bacteria, plant dissection and analyses, as well as DNA extraction,

PCR, restriction digestion and gel electrophoresis. In-person labs gave students hands-on skills while learning theory. Remote laboratory exercises focused on the theory of the techniques used and reading of primary literature papers associated with the skills.

General Chemistry I, II, and III with Laboratory – The following fundamental principles of chemistry were presented: the definition and characterization of matter and inorganic nomenclature; stoichiometry and the mole; atomic structure, electron configuration and periodic properties of the elements and trends. Principles of chemical bonding including Lewis structures and molecular shape were also introduced as well as gas laws and the relationship between structure and physical states of matter. More detailed quantitative topics included thermochemistry, chemical kinetics, chemical and acid-base equilibria including buffers, thermodynamics, redox reactions, and electrochemistry. In the chemistry laboratory students were introduced to basic chemistry experiments, as well as qualitative and quantitative techniques involving aqueous solution chemistry. Experiments included acid-base titrations; redox titration; kinetics and determination of activation energy; free energy and solubility equilibria; and testing of buffer capacity. Evaluations were based on participation, engagement, and weekly assessments including homework assignments, on-line examinations and quizzes, post-lab homework assignments, and formal laboratory reports.

Textbook: T. E. Brown, H. E. LeMay, B. E. Bursten, C. J. Murphy, P. M. Woodward, and M. W. Stoltzfus, *Chemistry: The Central Science,* 14th ed.

Statistics I – Concepts in Statistics I and hands-on activities allowed students to practice using statistical methods with real-world data. Topics included probability, variable types, basic summary statistics (mean, median, mode, variance, standard deviation, standard error), and parametric statistical methods: Students t-tests, Chi-square tests, Least Squares Regression, and Correlation. Students learned to use formulae and macros in Excel. Students learned to analyze raw data, interpret statistical results, and create professional quality figures to display scientific results. Students had biweekly quizzes on statistical concepts to test their own knowledge progression. Students engaged in weekly discussion boards while working on statistics labs to problem-solve issues with data analysis, software, and the interpretation of statistical findings. They completed a final practical exercise where they selected the appropriate statistical tests to analyze data collected through field research projects. They needed to collect and organize data, run hypothesis tests, interpret results, and create figures.

Field Techniques and Scientific Communication – Field exercises were intended to deepen the understanding of concepts covered in biology and statistics lectures/assignments. This area focused on data collection using field techniques such as plant identification, snail surveys, and quadrat plot sampling. The focus was on building students' understanding of the process of science with a particular emphasis on experimental design, data collection, statistical analysis, and scientific communication. Mid-to-late fall quarter, students read and answered questions about three primary literature papers, and worked in groups to design small field projects. As a small group, they collected and analyzed field data, wrote up their findings in a short paper, and presented their work to the class in a formal presentation. Mid-to-late winter quarter, students read and answered questions about two primary literature papers and a research talk presented to the class.

Applied Math – Assignments included problem sets on algebra practice, including logarithms and exponents, dimensional analysis, making solutions and dilutions, spatial reasoning, graphing and experimental design. Evaluations were based on participation and weekly completion of the work.

Foundations of College Success – First-Year students' academic skill development was supported by their participation in Foundations of College Success, a module of instruction and community-building activities where students were introduced to college support services and practices, wellness strategies, study techniques, and metacognitive strategies to foster both personal and academic growth.

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EVALUATION:
Written by: Clarissa Dirks, Ph.D., Carri J. LeRoy, Ph.D., Lydia McKinstry, Ph.D.

Samantha (Sam) enrolled in the General Biology, General Chemistry, Statistics, Applied Math, Field Techniques and Scientific Communication, and Foundations of College Success components of Integrated Natural Sciences. Sam's engagement in the program was excellent as evidenced by attendance and participation. Sam was committed to doing well and learning the concepts and methods introduced. Throughout the year, students synthesized their learning with many homework assignments, weekly quizzes and biweekly exams, formal reports, and by reading several primary literature papers. Sam has now gained the foundational knowledge necessary to pursue upper level work in science.

General Biology: Evolution and Ecology – Sam demonstrated an overall very good comprehension of the concepts and skills presented in General Biology: Evolution and Ecology as evidenced by work in online problem-solving sessions and online weekly quizzes. Samantha's performance on quizzes indicated a very good understanding of the material. Sam turned in all but one homework assignment, which were well done. In general, Sam showed enthusiasm for learning biology and worked well with peers during online workshop sessions.

General Biology: Molecular and Cell Biology – In General Biology: Molecular and Cell Biology, Sam demonstrated an overall very good comprehension of the concepts as evidenced by work in online problem-solving sessions and online weekly quizzes. Sam's performance on quizzes indicated a good understanding of the material. Sam turned in all homework assignments.

General Biology: Animal Physiology – Sam demonstrated an overall good comprehension of the concepts and skills presented in General Biology: Animal Physiology as evidenced by work in online problem-solving sessions and online weekly quizzes. Samantha's performance on quizzes indicated a good understanding of the material. Sam turned in all but one homework assignment.

General Biology: Biodiversity – Sam demonstrated an overall good comprehension of the concepts and skills presented as evidenced by their work in online lectures and workshop sessions. Samantha's performance on online quizzes indicated that they had a good understanding of the material. Sam turned in 6 of 8 homework assignments, which were well done. In general, Sam showed enthusiasm for learning biology and worked well with peers during online workshop sessions. At the end of the quarter, Sam showed excellent communication skills with an informative paper and a well-delivered presentation on the honeybee, genus *Apis*.

General Biology Laboratory – This work was an opportunity for Sam to engage in hands-on biology to learn a variety of skills for upper division work. During lab sessions, Sam showed very good laboratory skills, was a good problem solver, and frequently asked insightful questions. Sam turned in 3 of 4 pre-lab assignments and laboratory reports showed a good record of thinking and actions while performing experiments.

General Chemistry I, II, and III with Laboratory – Sam is a dedicated student who worked hard to develop an overall good to very good understanding of the basic concepts and skills presented in chemistry. Sam was well prepared for each activity and submitted nearly all of the homework assignments. Sam was a very active learner throughout the year and made excellent use of workshop time, which greatly enhanced Sam's learning. In fact, Sam made outstanding contributions to the learning community; many of Sam's classmates benefitted from Sam's collaborative strength during workshop sessions. Sam struggled with some of the topics but Sam's responses on homework assignments, quizzes, and examinations demonstrated good working knowledge of stoichiometry and aqueous solution calculations, atomic structure and periodic trends, and the fundamental theories of chemical bonding. Sam also demonstrated good to very good understanding of the quantitative material involving acid-base

chemistry and buffers, redox chemistry, kinetics, chemical equilibrium and thermodynamics. Sam was very engaged during the chemistry laboratory sessions and effectively developed the bench skills introduced. Sam was well prepared for laboratory work as evidenced by her completed pre-lab assignments. Sam completed two thirds of the post-lab assignments and the laboratory reports submitted included calculations and data analysis that were mostly complete, demonstrating good understanding of the purpose and concept of each experiment.

Statistics I – Sam was an active participant in the Statistics I component of this program. To this end, Sam always participated fully in weekly videoconferences to build community around the study of statistics. In addition, Sam was an exceedingly active participant in online discussion boards covering topics in statistics each week. In particular, Sam used the discussion boards to help other students with the material by posting questions to deepen student learning. The quality of the discussion posts was always high. Sam completed all weekly statistics assignments covering a variety of topics and the applications of statistics to real-world data. The work on statistics labs was consistently strong. Based on biweekly quizzes, Sam demonstrated competence in terms of understanding statistical concepts and the ability to think through statistical problems. A final, cumulative exam showed that Sam has a solid understanding of statistical concepts, and is able to think critically about statistical outputs and interpretations. A final statistical experience, which involved students collecting datasets and working to analyze them through choosing appropriate tests, running tests, and interpreting their outcomes, demonstrated that Sam learned a considerable amount and is able to think through both statistical analysis and interpretation for the statistical tests covered in fall quarter.

Field Techniques and Scientific Communication – Sam demonstrated good learning and engagement in Field Techniques and Scientific Communication and turned in all but one assignment in this area. Sam participated in learning field survey techniques and seminars of primary literature about evolution and ecology. As a culminating research experience, Sam engaged in a small group study of plant species richness along an elevation gradient. Sam's team was tasked with both writing a scientific paper and developing an oral Ignite presentation on their research. It involved considerable time outside of class as well as collaboration and organization. The group gave a very good presentation of their work and Sam was an equal contributor.

Foundations of College Success – Sam successfully completed the Foundations of College Success portion of our program, submitting most of the required work and consistently engaging in the community-building and academic support activities.

Applied Math – Sam was consistent in participation and collaboration in applied math workshops throughout the winter quarter. Sam submitted all of the problem sets and to a high level of completion. This work demonstrated good quantitative reasoning skills.

SUGGESTED COURSE EQUIVALENCIES (in quarter hours) TOTAL: 44

- 4 - General Biology: Evolution and Ecology
- 5 - General Biology: Molecular and Cellular Biology
- 3 - General Biology: Animal Physiology
- 3 - General Biology: Biodiversity
- 3 - General Biology Laboratory
- 16 - General Chemistry I, II, and III with Laboratory
- 4 - Statistics I
- 2 - Field Techniques and Scientific Communication
- 2 - Foundations of College Success
- 2 - Applied Math: Problem Solving Skills and Scientific Communication

EVERGREEN

The Evergreen State College • Olympia, WA 98505 • www.evergreen.edu

EVERGREEN TRANSCRIPT GUIDE

Accreditation: The Evergreen State College is fully accredited by the Northwest Commission on Colleges and Universities.

Degrees Awarded: The Evergreen State College awards the following degrees: Bachelor of Arts, Bachelor of Science, Master of Environmental Studies, Master of Public Administration and Master In Teaching. Degree awards are listed on the Record of Academic Achievement.

Educational Philosophy:

Our curriculum places high value on these modes of learning and teaching objectives:

- Interdisciplinary Learning
- Collaborative Learning
- Learning Across Significant Differences
- Personal Engagement
- Linking Theory with Practical Applications

Our expectations of Evergreen Graduates are that during their time at Evergreen they will:

- Articulate and assume responsibility for their own work
- Participate collaboratively and responsibly in our diverse society
- Communicate creatively and effectively
- Demonstrate integrative, independent, critical thinking
- Apply qualitative, quantitative and creative modes of inquiry appropriately to practical and theoretical problems across disciplines, and,
- As a culmination of their education, demonstrate depth, breadth and synthesis of learning and the ability to reflect on the personal and social significance of that learning.

Our students have the opportunity to participate in frequent, mutual evaluation of academic programs, faculty and students. In collaboration with faculty and advisors, students develop individual academic concentrations.

Academic Program

Modes of Learning: Evergreen's curriculum is primarily team-taught and interdisciplinary. Students may choose from among several modes of study:

- **Programs:** Faculty members from different disciplines work together with students on a unifying question or theme. Programs may be up to three quarters long.
- **Individual Learning Contract:** Working closely with a faculty member, a student may design a one-quarter-long, full-time or part-time research or creative project. The contract document outlines both the activities of the contract and the criteria for evaluation. Most students are at upper division standing.
- **Internship Learning Contract:** Internships provide opportunities for students to link theory and practice in areas related to their interests. These full- or part-time opportunities involve close supervision by a field supervisor and a faculty sponsor.
- **Courses:** Courses are 2-6 credit offerings centered on a specific theme or discipline.

The numerical and alpha characters listed as Course Reference Numbers designate modes of learning and are in a random order.

Evaluation and Credit Award:

Our transcript consists of narrative evaluations. Narrative evaluations tell a rich and detailed story of the multiple facets involved in a student's academic work. A close reading of the narratives and attention to the course equivalencies will provide extensive information about student's abilities and experiences. Students are not awarded credit for work considered not passing. Evergreen will not translate our narrative transcript into letter or numeric grades.

Transcript Structure and Contents: The Record of Academic Achievement summarizes credit awarded, expressed in quarter credit hours. Transcript materials are presented in inverse chronological order so that the most recent evaluation(s) appears first.

Credit is recorded by:

Quarter Credit Hours:	Fall 1979 to present
Evergreen Units:	1 Evergreen Unit (1971 through Summer 1973) equals 5 quarter credit hours
	1 Evergreen Unit (Fall 1973 through Summer 1979) equals 4 quarter credit hours

Each academic entry in the transcript is accompanied by (unless noted otherwise):

- The Program Description, Individual Contract or Internship Contract which explains learning objectives, activities and content of the program, course or contract.
- The Faculty Evaluation of Student Achievement provides information on specific work the student completed and about how well the student performed in the program or contract.
- The Student's Own Evaluation of Personal Achievement is a reflective document written by the student evaluating his or her learning experiences. Students are encouraged but not required to include these documents in their official transcript, unless specified by faculty.
- The Student's Summative Self Evaluation is an optional evaluation summarizing a student's education and may be included as a separate document or as a part of the student's final self- evaluation.

Transfer credit for Evergreen programs, courses and individual study should be awarded based upon a careful review of the transcript document including the course equivalencies which are designed to make it easier for others to clearly interpret our interdisciplinary curriculum. These course equivalencies can be found at the conclusion of each of the Faculty Evaluation of Student Achievement.

The college academic calendar consists of four-eleven week quarters. Refer to the college website (www.evergreen.edu) for specific dates.

This record is authentic and official when the Record of Academic Achievement page is marked and dated with the school seal.
All information contained herein is confidential and its release is governed by the Family Educational Rights and Privacy Act of 1974 as amended.
If, after a thorough review of this transcript, you still have questions, please contact Registration and Records: (360) 867-6180.