RECORD OF ACADEMIC ACHIEVEMENT

The Evergreen State College - Olympia, Washington 98505

OFFICIAL TRANSCRIPT DOCUMENT

Neese, Ryan J — A00400610

Last, First Middle — Student ID

DEGREES CONFERRED:

Bachelor of Science — Awarded 14 Jun 2019

TRANSFER CREDIT:

Start	End	Credits	Title
09/2007	06/2013	41	**North Seattle College**
09/2007	06/2013	15	**North Seattle College**

EVERGREEN UNDERGRADUATE CREDIT:

Start	End	Credits	Title
01/2017	03/2017	16	**Introduction to Environmental Studies: Land** *7 - Forest Methods, Measurements, and Ecology* *7 - Environment and Society: Climate Change and Forests* *2 - Introductory Research in Environmental Studies*
04/2017	06/2017	16	**Trees and Native People** *4 - Dendrology* *2 - Introduction to Botany* *2 - Introduction to Ecology and Natural History* *4 - Native American Studies/Traditional Indigenous Knowledge* *4 - Native American Studies/Trees and Pacific Northwest Native Nations*
06/2017	09/2017	16	**Wrangell Mt. AK Summer Field** *4 - Natural History of Alaska* *8 - Independent Research Project in Sociology* *4 - People and Protected Areas*
09/2017	06/2018	44	**Integrated Natural Science** *7 - General Biology: Evolution and Ecology* *9 - General Biology: Cell and Molecular with Laboratory* *3 - General Biology: Physiology* *14 - General Chemistry I, II and III with Laboratory* *4 - Historical Geology* *4 - Fundamentals of Soil Science* *3 - Science Communication*
09/2018	12/2018	4	**Anatomy and Physiology I** *4 - Anatomy and Physiology 1 with Laboratory*
01/2019	06/2019	48	**Molecule to Organism** **6 - Molecular and Cellular Biology with Laboratory* **17 - Organic Chemistry I, II and III with Laboratory* **9 - Biochemistry with Laboratory* **6 - Microbiology with Laboratory* **4 - Genetics* **2 - Advanced Microscopy: Confocal and Stereoscopic Microscopes* **4 - Research with Field, Laboratory, and Instrumentation Methods*

Neese, Ryan J — A00400610
Last, First Middle — Student ID

EVERGREEN UNDERGRADUATE CREDIT:

Start	End	Credits	Title
01/2019	03/2019	4	**Anatomy and Physiology II** *2 - Anatomy and Physiology 1 with Laboratory* *2 - Anatomy and Physiology 2 with Laboratory*
04/2019	06/2019	4	**Anatomy & Physiology III** *4 - Anatomy and Physiology 2 with laboratory*

Cumulative

208 Total Undergraduate Credits Earned

Neese, Ryan J — A00400610

Last, First Middle — Student ID

My education at The Evergreen State College focused on life sciences and the natural world. During my nine academic quarters attending Evergreen to earn a Bachelor of Science degree, I completed interdisciplinary classes that explored subjects including dendrology, geology, glaciology, ecology, anatomy, physiology, and climate science.

Subsequently, I spent a significant portion of my education focusing on biology and chemistry. Specifically, I studied the disciplines of molecular and microbiology, genetics, biochemistry, and analytical and organic chemistry. Throughout these courses I gained extensive experience working in biology and chemistry labs as well as time spent doing field work. I also received training on operation of an Oxford 400 Mz FT-NMR, Leica MZ16 Z-Stacking Stereo Microscope, and an Olympus 1X81 Confocal Microscope.

I often had the opportunity to work in collaborative groups with diverse classmates, which provided me insights into communication techniques, conflict resolution, and learning styles different from my own. The most unique of these experiences was my summer spent in the Wrangell Mountains Field Studies program in Wrangell-St. Elias National Park where I overcame various challenges to learn and connect with classmates during backcountry research trips studying the geology, ecology, and glaciers of the park and the anthropogenic impact on the environment. Learning from interdisciplinary teams of professors contributed to my understanding of broader connections between each discipline I studied and how to utilize critical thinking when solving problems.

Neese, Ryan J — A00400610
Last, First Middle — Student ID

April 2019 - June 2019: Anatomy & Physiology III

4 Credits

DESCRIPTION:
Faculty: Amanda Kugel, D.C.

Anatomy and Physiology III with laboratory, the third course in a three-part series, explored multiple human body systems with structures dedicated to the physiology involved in fluid transport, defense, and environmental exchange processes. Topics throughout the quarter included the cardiovascular system, respiratory system, lymphatic system and immunity, digestive system, and urinary system. Within each system we identified the cell populations, major tissues and organs and discussed their physiologic roles in maintaining homeostasis at the system and organismal levels. The course utilized the text *Laboratory Manual for Anatomy and Physiology, 6th ed*, by Connie Allen and Valerie Harper.

Concepts covered in the cardiovascular system encompassed blood components, the heart, and blood vessels. Discussion of blood physiology included formation of blood components, analysis and interpretation of blood tests, group performance of blood typing for ABO & Rh systems and a simulated differential white blood cell count. A comprehensive analysis of the heart and blood vessels involved tracing the flow of blood from the heart through the circulatory system, while also naming major arteries and veins. Dissection of a sheep heart and labeling diagrams aided students in identification of heart structures, accompanied by auscultation of heart sounds to understanding the cardiac cycle. In conjunction with discussion of blood pressure dynamics students also performed laboratory measurement using a sphygmomanometer. Analysis of an electrocardiogram (ECG) printout facilitated understanding of the electrical and mechanical events of the heart. The respiratory system concepts involved discussion of pulmonary ventilation mechanics and gas exchange, along with use of a wet spirometer to measure pulmonary volumes and calculate capacities. During the lymphatic system we discussed formation of lymph in relation to capillary hydrostatic and osmotic pressure forces, along with defense of the organism through the innate and adaptive immune systems. The session ended with a discussion of renal physiology in urine formation and identification of digestive and urinary system organs through dissection of fetal pigs and sheep kidneys.

Students were assessed based on daily attendance, participation in group discussions and worksheets, participation in physiology laboratories, identification of structures on skeletons, human torso models and dissection specimens, and online quizzes which included standardized questions and short answer essay responses.

EVALUATION:
Written by: Amanda Kugel, D.C.

Ryan successfully completed this third course in the Anatomy and Physiology with laboratory series. He attended most classes. When present he engaged in laboratory activities, and submitted all required online assignments. Overall, he demonstrated an above average understanding of each body system, with his best work in the cardiovascular system, as evidenced by online quizzes. Responses to short-answer essays were often concise, yet contained necessary points to answer the question posed. During clinical skill assessments in laboratory, Ryan proficiently performed auscultation of heart and lung sounds, blood pressure measurement and synthetic blood typing. He also used anatomical models and dissections to correctly identify necessary organs and structures. Ryan met all course requirements to successfully earn full course credits.

Neese, Ryan J — A00400610

Last, First Middle — Student ID

SUGGESTED COURSE EQUIVALENCIES (in quarter hours) TOTAL: 4

4 - Anatomy and Physiology 2 with laboratory

Neese, Ryan J — A00400610
Last, First Middle — Student ID

January 2019 - March 2019: Anatomy and Physiology II

4 Credits

DESCRIPTION:
Faculty: Amanda Kugel, D.C.

Anatomy and Physiology II with laboratory, the second course in a three-part series, explored the body systems involved in control and regulation of the human body, as well as reproduction. The course was designed to give an introductory knowledge of the human body structures and functions to prepare students for health-related career fields, as well as enhance their ability to decipher health information encountered in social media and the healthcare system. Topics covered during the quarter included the endocrine system, reproductive system and nervous system. Within each system students identified the cell populations, locations and functions of major tissues and organs and the overall physiologic role each system contributed to in maintaining homeostasis in the human body. The course used the text *Laboratory Manual for Anatomy and Physiology, sixth edition,* by Connie Allen and Valerie Harper.

Concepts discussed within the endocrine system included hormonal production, cellular action mechanisms, and homeostatic regulation via feedback loops. The primary focuses this quarter revolved around hormones of the primary endocrine tissues and organs; the secondary tissues and organs will be discussed with their respective organ systems next quarter. Within the reproductive system we focused on formation of sex cells, structural components and physiology of the reproductive tracts and gonads, and discussed events of the male and female reproductive cycles. The nervous system was further broken down into topics including structures and functions of the central and peripheral nervous systems which included the brain, spinal cord and peripheral nerves; distinguishing between general sensations and the special senses including vision, hearing, equilibrium, taste and smell. Physiological concepts for the nervous system included the signaling physiology of neurons, reflex arc components as well as production and flow patterns of cerebrospinal fluid.

Evaluation of student work included reading and discussion of the article "Cortisol: Its Role in Stress, Inflammation, and Indications for Diet Therapy" by Aronson (2009), to integrate how the stress response is perceived by the nervous system and manifests as signs and symptoms in other body systems. Laboratory participation included dissections of sheep brain and a cow eyeball to reinforce the gross anatomy presented in lecture, performance of clinical reflex testing to understand the components of reflex arc, and use of human torso models to locate organs of the reproductive and endocrine systems. Students were assessed based on daily attendance, participation in group discussions and laboratories, article critique, and weekly quizzes which included standardized questions and essay responses.

EVALUATION:
Written by: Amanda Kugel, D.C.

Ryan met requirements for attendance, completed all laboratory activities, and submitted all required assignments. Based upon quizzes containing standardized questions assessing fact-based knowledge of structures as well as essay questions assessing understanding of physiologic processes, he demonstrated above average understanding. Improvement could be made regarding structural identification on diagrams of the brain and spinal cord as tested on the final assessment, though he demonstrated effective structural identification when asked to place colored pins in the brain during dissection. Ryan successfully demonstrated clinic skills during the reflex physiology laboratory by eliciting the patellar response and utilizing the Jendrassik maneuver. Submitted essays demonstrated clear knowledge of physiological processes taking place within each body system covered this quarter. Ryan was particularly reflective in his responses to the Cortisol article, integrating current societal stressors

Neese, Ryan J — A00400610
Last, First Middle — Student ID

with the hormonal responses brought about by excessive cortisol secretion. Ryan completed all course requirements and earned full credit.

SUGGESTED COURSE EQUIVALENCIES (in quarter hours) TOTAL: 4

2 - Anatomy and Physiology 1 with Laboratory
2 - Anatomy and Physiology 2 with Laboratory

Neese, Ryan J — A00400610
Last, First Middle — Student ID

September 2018 - June 2019: Molecule to Organism

48 Credits

DESCRIPTION:
Faculty: Clarissa Dirks, Ph.D. and Lydia McKinstry, Ph.D.

Molecule to Organism is a yearlong interdisciplinary science program that includes upper division biology and chemistry. Although each subject is listed separately, the material was delivered in an integrated manner. Each week, students spent approximately 20 hours in lecture, laboratory and problem solving workshop sessions. Workshop sessions included questions that allowed students to apply and synthesize the material covered in lecture and laboratory. Evaluation of students was based on completion of homework, quality of laboratory notebooks, formal reports, performance on in-class examinations, and attendance.

Molecular and Cellular Biology with Laboratory: In the fall quarter, we began with an overview of the chemistry, structure, and function of biological molecules. Students studied lipids, nucleic acids, water, osmosis, and diffusion. This was followed by an in-depth study of protein structure and function, as well as protein movement into membranes and organelles. This content served as a good transition into the study of vesicular trafficking, secretion, and endocytosis, in addition to ion transport. Students engaged in learning numerous molecular genetic techniques inclusive of Western, Northern and Southern blots, protein purification and diagnostic techniques, microarray analysis, and several other important techniques used in molecular biology. At the end of the quarter, students studied DNA replication and repair, genes, genomics, and chromosomes. The laboratory sessions included protein purification and a three-week recombinant plasmid cloning project.

Textbook: H. Lodish et al., *Molecular Cell Biology*, 7th ed., W. H. Freeman.

Microbiology with Laboratory: Students studied microbiology in two parts: virology and bacteriology. Specific content included an overview of viruses, epidemiology, viral diversity, genome structures, modes of replication, and related diseases. In bacteriology, students studied microbial growth, metabolism, systematics, and diversity. Laboratory sessions aimed at conducting tissue culture assays including virus transductions and immunofluorescence staining, as well as diagnostic assays for identification of a panel of unknown bacteria. Students performed approximately 16 staining and growth-dependent identification tests to distinguish and classify ten unknown bacteria.

Textbook: M. T. Madigan et al., *Brock Biology of Microorganisms*, 15th ed., Pearson.

Organic Chemistry I, II and III with Laboratory: This component of the program emphasized the relationship between the structure and behavior of organic molecules. Specific concepts included: theories of chemical bonding, acid-base properties of organic molecules, nomenclature, electron delocalization, conjugation and aromaticity. The following reactions and mechanisms were emphasized, using a thermodynamic approach: nucleophilic substitution (SN1 and SN2), elimination (E1 and E2), electrophilic addition in olefinic and aromatic systems (EAS), nucleophilic addition and addition-elimination in carbonyl compounds and in aromatic compounds (SNAr), enol/enolate alkylation and acylation. Simple organometallic and radical addition chemistry was also introduced, as were pericyclic cycloaddition and rearrangement reactions. Concepts of stereo- and regioselectivity were introduced and emphasized in all aspects of this work. The theories of mass spectrometry (GCMS), infrared (FTIR), and nuclear magnetic resonance (FTNMR) spectroscopies were also introduced. Application of these principles and instrumentation methods in molecular structure elucidation was also emphasized. The 2018 ACS Organic Chemistry standardized test was administered for a cumulative final examination. Laboratory work introduced common techniques in synthetic organic chemistry, including: reflux, extraction, recrystallization, distillation, and chromatography (thin-layer, gas and flash column).

Chromatography, spectroscopy, and melting point determination were all used comprehensively as analytical tools

Textbook: P. Y. Bruice, *Organic Chemistry*, 8th ed., Pearson.

Biochemistry with Laboratory: The major topics covered in this portion of the program were the characteristics of biological molecules (amino acids, proteins, nucleic acids, carbohydrates, and lipids), acid-base chemistry, pKa and buffers, protein function and ligand binding, hemoglobin, the nature of biological catalysis, oxidation and reduction in metabolic processes, Michaelis-Menten enzyme kinetics, and major metabolic pathways (glycolysis, gluconeogenesis, pentose phosphate pathway, tricarboxylic acid cycle, and oxidative phosphorylation). Biochemical topics were approached from a thermodynamic perspective with emphasis placed on the roles of entropy and energy in biology. The central ideology of the program--structure, function and property--was a recurring theme used to examine the nature of biology in relation to principles in organic chemistry. The laboratory focused on the techniques required to work in a modern biochemistry laboratory such as ion exchange chromatography, protein isolation, gel electrophoresis, and enzyme kinetics studies.

Textbook: D. L. Nelson and M. M. Cox, *Lehninger: Principles of Biochemistry*, 6th ed., W. H. Freeman.

Genetics: Students began their study with transmission and population genetics to complement field and laboratory research work. Specific genetics topics studied the rest of the quarter were cell division and chromosome heredity, gene interactions, genetic linkage and mapping in eukaryotes and recombinant DNA technology and its applications. Students engaged in several bioinformatics sessions that emphasized the extraction and analysis of DNA sequences using online tools and MEGA 7.0.

Textbook: Mark Sanders and John Bowman, *Genetic Analysis*, 3rd ed., Pearson.

Chemical Instrumentation or Advanced Microscopy: In this portion of the program students learned the theory and instrumental techniques of mass spectrometry (GCMS), nuclear magnetic resonance (FTNMR) spectroscopy, scanning electron microscopy (SEM), or confocal microscopy through on-line and hands-on workshop instruction.

Research with Field, Laboratory and Instrumentation Methods: Students learned theory and instrumental techniques of spectroscopy or advanced microscopy through on-line and hands-on workshop instruction. These methods were applied to an all program research project in Malacology whereby students did field surveys, collected snails, taxonomically identified them, and processed them for analysis. Students participated in analysis of snail CO1 genes, dissection of reproductive parts, SEM analyses of radula, shell photography, as well as chromatography and spectroscopy of lichen metabolites associated with snail feeding preferences.

EVALUATION:
Written by: Clarissa Dirks, Ph.D. and Lydia McKinstry, Ph.D.

Ryan enrolled in the Molecule to Organism program to develop an interdisciplinary understanding of the concepts and techniques of Molecular and Cellular Biology, Microbiology, Genetics, Organic Chemistry, and Biochemistry. His commitment to, and performance in the program was overall good. His preparation and learning habits were consistently strong throughout the year and he made excellent use of his time and program resources. Ryan was a constructive participant in all program activities, and demonstrated collaborative ability in a variety of situations. He worked successfully with his peers in solving problems and completing group assignments in workshop and the laboratory.

Neese, Ryan J — A00400610
Last, First Middle — Student ID

Overall, Ryan was an excellent student in Molecular and Cellular Biology as evidenced by homework, in-class examinations, and quiz scores. Ryan's performance on examinations demonstrated excellent understanding of biomolecules, cellular systems, and molecular techniques. Ryan turned in all but two homework assignments. In the laboratory, Ryan's notebook was fair as it lacked results from experimentation but had good organization.

Ryan's work in Organic Chemistry showed an overall fair to good understanding of the fundamental concepts and general ideas. He completed nearly all assignments but his examination responses demonstrated that he hadn't fully grasped the concepts of functional group reactivity and organic reactions. Ryan especially struggles with mechanisms. He learned the theory and instrumental techniques of GCMS, FTIR, and FTNMR spectroscopies and demonstrated fair to good understanding of how to use these techniques to elucidate the structure of organic compounds. Ryan was an engaged worker in the laboratory and he successfully learned the basic bench skills and techniques presented. Ryan demonstrated good pre-lab preparation and his laboratory notebook contained a somewhat complete record of the procedures, data, and calculations. His written discussions and data interpretations made some connections to relevant theories and concepts and demonstrated that he was clearly thinking about what he was doing in the laboratory. Throughout the year, Ryan submitted three formal laboratory reports - one describing regioselectivity in an alcohol dehydration reaction, one describing competitive electrophilic aromatic substitution, and one describing a Michael addition reaction. These reports were complete and organized and the discussions also made good connections to underlying principles.

In Biochemistry, Ryan demonstrated an overall very good comprehension of the concepts and skills presented, as evidenced by his work in lecture and laboratory sessions. He completed all of the homework and pre-lab assignments. Ryan's performance on in-class exams indicated a fairly good understanding of the quantitative work involving buffers, bioenergetics, and the concepts and calculations of Michaels-Menten enzyme kinetics. Ryan demonstrated a very good comprehension of protein purification, enzyme regulation, and ligand binding. He also demonstrated very good comprehension of carbohydrate and lipid structure and function. Lastly, Ryan demonstrated good understanding of major metabolic pathways. Throughout the year, he submitted three formal laboratory reports - one describing the identification of an unknown amino acid by titration analysis, one describing enzyme kinetics, and one on the analysis of activation energy in an enzyme-catalyzed reaction. The first two reports were well written and organized but the discussions could have been more comprehensive in showing his understanding of the concepts and calculations. However, Ryan's final report was improved and effectively showed very good understanding of the kinetics and free energy calculations.

Ryan demonstrated outstanding understanding of Microbiology as demonstrated by performance on examinations and homework assignments. Ryan's examination scores in virology and bacteriology were at the top of the class and Ryan turned in all homework assignments. In the laboratory, Ryan was a very good experimentalist and showed enthusiasm for learning the microbiology techniques. Ryan successfully carried out several tissue culture experiments and was very thorough in investigations to identify the bacterial unknowns. Ryan's laboratory notebook was a very good record of work, showing good organization and analyses while drawing accurate and meaningful conclusions.

Ryan's work in Genetics showed an overall very good understanding of the core principles of the discipline: genes, genetic variation, and heredity in organisms. He completed all homework and pre-lab assignments. Ryan's performance on in-class examinations indicated that he had a very good comprehension of chromosome heredity, gene interactions, genetic linkage, and recombinant DNA technology. Ryan also demonstrated the ability to computationally analyze and interpret biological information during bioinformatics sessions.

Neese, Ryan J — A00400610
Last, First Middle — Student ID

Ryan participated in hands-on use and theoretical learning of scientific instrumentation in preparation for future research endeavors. In winter quarter, he gained certification as an operator on the confocal and stereoscopic z-stacking microscopes by showing good understanding of the theory and core principles behind the use of the instruments.

In spring quarter, Ryan engaged in field and laboratory research using a variety of methods and instruments. Ryan gained certification as an operator on a nuclear magnetic resonance spectrometer. As a culminating experience, the class engaged in a collective malacology study which emphasized the classification, description, and analysis of snail species in the state of Washington. Ryan applied acquired skills to attempt to identify an unknown orange slug, now presumably *Prophysaon sp*. as it fits the criteria of the genus. Ryan did excellent work on the project and kept a very good field and laboratory notebook. At the end of the quarter, the group wrote an informative scientific vignette.

SUGGESTED COURSE EQUIVALENCIES (in quarter hours) TOTAL: 48

*6 - Molecular and Cellular Biology with Laboratory
*17 - Organic Chemistry I, II and III with Laboratory
*9 - Biochemistry with Laboratory
*6 - Microbiology with Laboratory
*4 - Genetics
*2 - Advanced Microscopy: Confocal and Stereoscopic Microscopes
*4 - Research with Field, Laboratory, and Instrumentation Methods

* indicates upper-division science credit

Neese, Ryan J — A00400610
Last, First Middle — Student ID

September 2018 - December 2018: Anatomy and Physiology I

4 Credits

DESCRIPTION:
Faculty: Amanda Kugel, D.C.

This course was designed for students to develop a working knowledge and understanding of the structures and functions of the human body. Topics covered included a review of cellular structure and biochemistry, a detailed discussion of the four primary tissues types, as well as exploration of the integumentary, muscular, and skeletal systems. Within each body system, students were expected to locate and identify pertinent tissues or organs. Additionally, they were asked to describe the physiological processes of the cell populations and organs, which contributed to the overall homeostasis of the organism. Anatomical position and terminology were integrated throughout the course to give students the necessary tools for communicating effectively with others in health-related fields. Laboratory components included compound microscopy to identify tissue types, identification of axial and appendicular bones using articulated skeletons and disarticulated models, identification and classification of joints on the skeleton, as well as electromyography using the Biopac student laboratory equipment to understand muscle physiology. Students were evaluated based on weekly worksheets associated with videos to prepare for class, participation in individual & group laboratory activities, weekly quizzes including short-answer essay responses and standardized questioning, as well as a final laboratory practical to identify bones.

EVALUATION:
Written by: Amanda Kugel, D.C.

Ryan met all attendance and assignment requirements for the course, turning in a final portfolio exhibiting strong organizational skills. His portfolio included completed study guides and notes providing evidence of self-directed learning to identify axial and appendicular skeletal components; on the final laboratory practical he successfully identified most skeletal components. Weekly quizzes containing standardized questions to define and identify structural components in each topic revealed an above average to excellent comprehension; while initially his short-essay responses were concise yet accurate in portraying understanding of cellular and tissue physiology, more detailed writing containing multiple points of support for the muscular and skeletal system physiology emerged by the end of the quarter. His summary of a technical article on bone physiology was articulate and logical, showing his ability to interpret and communicate scientific information to a broader audience. Throughout the course I observed Ryan apply himself to hands on laboratory activities, working respectfully within a group setting. During lab activities Ryan demonstrated correct use of the compound light microscope and the ability to communicate using anatomical terminology. Ryan completed all course requirements, earning full credit for the quarter.

SUGGESTED COURSE EQUIVALENCIES (in quarter hours) TOTAL: 4

4 - Anatomy and Physiology 1 with Laboratory

Neese, Ryan J — A00400610
Last, First Middle — Student ID

September 2017 - June 2018: Integrated Natural Science

44 Credits

DESCRIPTION:
Faculty: Abir Biswas, Ph.D., Clarissa Dirks, Ph.D., Robin Forbes-Lorman, Ph.D., Mike Paros, D.V.M., and Paula Schofield, Ph.D.

Integrated Natural Science is a full year interdisciplinary science program that includes general biology, general chemistry, historical geology, and soil science. The following description is for fall, winter and spring quarters, and although each subject is listed separately, the material was delivered in an integrated manner, approaching many concepts from biological, historical, and chemical perspectives. Each week, students spent 13 hours in lecture and small group problem solving sessions, and 6 hours in laboratory. Students were assessed through completion of homework assignments, quality of laboratory notebooks, and performance on several quizzes and examinations.

General Biology: Evolution and Ecology with Laboratory: The textbook for all biology was *Biological Science*, 6th ed., by Freeman et al. Students also read several primary literature papers to learn the many topics covered. In this area we began with the focus of life by analyzing patterns of natural selection and inheritance. Concepts in Mendelian Genetics and the chromosomal basis of heredity were explored using a problem based approach. Evolutionary processes were covered by studying how allele frequencies can change in populations. The history of life included a more in-depth study of bacteria, archaea, fungi, protists, plants, and animals. Students also engaged in learning about viruses, viral evolution and the immune system. Students applied their knowledge of the diversity of life to the study of ecology at multiple scales: behavioral, community, population, and ecosystems. Laboratory investigations included plant dissections, identifying and classifying unknown organisms, meiofaunal research surveys, and field methods. On a 4-day field trip to Eastern Washington, students conducted ecological field research in small groups. They made field observations, designed natural experiments, collected substantive data sets, and employed appropriate statistical analysis when possible. After data analysis they created a one page vignette of their work.

General Biology: Cell and Molecular with Laboratory: Students learned about the characteristics of living organisms and the changes that occurred in the cell across evolutionary time, including the plasma membrane, bacteria and archaea structure and function, eukaryote structure and function, and multicellularity. Labs included aseptic technique, bacterial growth and quantification, bacterial identification, microscopy, and subcellular fractionation. In winter quarter, students learned core concepts in cellular biology, molecular biology, and biochemistry. Specific topics included nucleic acid structure and function, protein structure and function, gene expression and regulation, cell membrane transport and signaling, cell division and the molecular basis of cancer, cell respiration and metabolism, and photosynthesis labs focused on molecular biology techniques, including PCR, gel electrophoresis, cloning, and signal transduction in yeast.

General Biology: Physiology with Laboratory: This part of the program focused on mechanisms that organisms use to address some common issues of survival and maintain homeostasis. Specific topics included coordination and control via the nervous and endocrine systems, neural signaling, sensory biology, water and electrolyte balance, and gas exchange and transport. Labs included gross and microscopic anatomy, cardiovascular physiology, and urinary physiology.

General Chemistry I, II & III with Laboratory: The textbook was *Chemistry: The Central Science*, 13th ed., by Brown, Le May and Bursten. Topics covered in fall and winter included measurement, nomenclature of inorganic compounds, stoichiometry, aqueous reactions, ionic equations, periodic properties of the elements, electron configuration, Lewis structures, chemical bonding, molecular shape,

and intermolecular forces. More detailed topics covered included thermochemistry, chemical kinetics, and general chemical equilibri. Aspects of chemistry as they relate to biological systems were emphasized, such as biological redox reactions, enzyme kinetics, and the thermodynamics of biochemical reactions. In spring quarter, students applied their knowledge to more complex concepts in bonding (hybrid orbital and molecular orbital models), aqueous equilibria: acid-base, buffers, and solubility product, electrochemistry and gas laws. In lab, students were introduced to the basic techniques of lab and field science. Laboratory exercises and techniques included UV and visible spectroscopy to determine the concentration of unknowns via standard curve methods; titrations, including an EPA method to determine the hardness of water, and a back titration; gas chromatography and thin-layer chromatography; natural product isolation via steam distillation; determination of a partition coefficient; acid-base extractions; the determination of the activation of an enzymatic reaction; polyprotic acid titrations to determine pKa, IR spectroscopy, and column chromatography of plant pigments. Field measurements including dissolved oxygen, pH, temperature, flow rate, and conductivity were carried out at various sites along a creek and a lake.

Historical Geology: The textbook *Earth System History*, 4th ed., by Stanley and Luczaj was used to cover topics related to the evolution of life and the evolution of geochemical cycles through geologic time. Students started with the Big Bang and Hadean Eon and progressed through time into the Pleistocene Epoch, with coursework supplemented by one fossil-based laboratory activity as well as abstracts and figures from primary literature. Some students elected not to take this fall quarter-only component of the program.

Fundamentals of Soil Science: The textbook *Elements of the Nature and Properties of Soils*, 3rd ed., by Brady and Weil was used to cover topics related to soil development and classification, the soil food web, and carbon, nitrogen, and phosphorus cycling in soils. Readings were supplemented with abstracts and figures from primary literature. Students characterized and collected soils from a local forest, and laboratory activities were focused on quantifying % water, % organic matter, and grain size distribution of these soils. Some students elected not to take this winter quarter-only component of the program.

Science Communication: In fall quarter, students completed a weekly synthesis assignment, in which they responded to weekly learning outcomes related to the material, made connections within the different content areas of the program, and reflected on their learning. For every assignment, students also completed anonymous peer reviews of two other students' syntheses. In spring quarter, students carried out an integrative group research project on an organism of their choice, culminating in a poster presentation. They used primary literature and other sources to study the physiology, evolution and ecology, and biochemistry of their organism.

EVALUATION:
Written by: Abir Biswas, Ph.D., Clarissa Dirks, Ph.D., Robin Forbes-Lorman, Ph.D., Mike Paros, D.V.M., and Paula Schofield, Ph.D.

Ryan entered this program to gain an understanding of the fundamentals of science and its application. Throughout the year, Ryan developed a foundation in the sciences, learning not only important topics in biology, chemistry, geology and soil science, but also gaining quantitative, laboratory, writing, and communication skills that are essential to becoming a literate scientist.

In the fall, based on weekly exams, Ryan showed adequate comprehension of the major biology concepts covered in the evolution portion of the program. Ryan completed all of the assigned reading and study questions throughout the quarter, demonstrating thorough preparation prior to lectures and workshops. In the spring, Ryan demonstrated an overall excellent comprehension of the concepts and skills presented as evidenced by work in and out of class. Ryan's performance on in-class exams

showed a good understanding of topics including the diversity of life, virology, immunology, and different levels of ecology. Ryan showed excellent engagement and turned in all but one homework assignment.

In the fall cell biology component of the program, Ryan demonstrated an adequate understanding of the material. In addition, Ryan mostly took advantage of the opportunity to engage in the material through assignments, completing seven of the nine assignments. Ryan did adequate work in lab: Ryan came somewhat prepared, with three of the five pre-labs completed. Ryan's lab notebook and lab analyses were adequate. In winter quarter, Ryan demonstrated an overall very good understanding of cell biology based on weekly quiz scores. Ryan completed all of the homework reading assignments. In addition, Ryan demonstrated a solid understanding of molecular biology. Ryan took advantage of the opportunity to engage in the material through assignments, completing eight of the nine assignments. Ryan did adequate work in molecular biology lab. He came prepared for lab, earning an average of 81% on pre-lab quizzes. Ryan completed two of the three lab analyses and these were adequate His lab notebook was good.

In the physiology component, Ryan demonstrated a solid understanding. In addition, Ryan mostly took advantage of the opportunity to engage in the material through assignments, completing five of the seven assignments.

In the yearlong study of general chemistry, Ryan worked hard to gain a foundation in chemistry and apply this knowledge to other sciences. He attended all class activities and completed all homework assignments. Ryan's performance improved, and overall, he demonstrated a solid understanding of the fundamentals of general chemistry, such as chemical equations, Lewis structures, chemical bonding, and stoichiometry. In addition, he showed a fairly good to mostly very good grasp of more complex and quantitative topics such as chemical kinetics, equilibria, and thermodynamics. Ryan worked well both individually and in small groups to apply his knowledge to solve problems. In lab, Ryan carried out his experiments in a safe and professional manner and learned the basic laboratory bench skills and techniques in general chemistry. Ryan's chemistry lab notebook was a good piece of work. It was quite detailed and organized, containing methods, data presentation, and analysis.

In the historical geology component of the program, Ryan was well-engaged and demonstrated an excellent understanding of the program content through in-class examinations. He had excellent attendance of the lectures and workshops and was relatively consistent in completing seven of nine homework assignments that were typically of very good quality. Through in class examinations, Ryan demonstrated a very good to excellent understanding of the evolution of life and geochemical systems in the Hadean through late Paleozoic, and he again demonstrated an excellent understanding of topics related to events through the Mesozoic Era. Ryan worked hard over the quarter, and on a final examination, he again demonstrated an excellent understanding of events and climate through the Pleistocene Epoch.

In the soil science component of the program, Ryan was very well-engaged and demonstrated an overall very good to excellent understanding of the program content through in-class examinations. He had excellent attendance of the lectures and workshops, completed homework assignments on time and very well, and his lab notebook included a very brief record of his field and lab work. Through in-class examinations, Ryan demonstrated an excellent understanding of topics related to soil formation and development and he demonstrated a very good to excellent understanding of topics related to soil classification, texture, and grain size distribution. Ryan worked hard over the quarter and he again demonstrated a good to very good understanding of material on a final in-class examination including carbon, nitrogen, and phosphorus cycles in soil.

In the science communication component of the program, Ryan completed all six weekly synthesis assignments, earning 83% of the possible points, and 10 of the 12 peer reviews. For the integrative

group research project, Ryan's group showed good use of the literature and application of presentation skills to convey the physiology, evolution and ecology, and biochemistry of their organism.

SUGGESTED COURSE EQUIVALENCIES (in quarter hours) TOTAL: 44

7 - General Biology: Evolution and Ecology
9 - General Biology: Cell and Molecular with Laboratory
3 - General Biology: Physiology
14 - General Chemistry I, II and III with Laboratory
4 - Historical Geology
4 - Fundamentals of Soil Science
3 - Science Communication

Neese, Ryan J — A00400610
Last, First Middle — Student ID

June 2017 - September 2017: Wrangell Mt. AK Summer Field

16 Credits

DESCRIPTION:
Faculty: Aliette Frank and Max Neale

This interdisciplinary field studies program introduced students to the human and natural landscapes of Wrangell St-Elias National Park and Preserve. With a home base in the small, off-grid community of McCarthy, Alaska, and four weeks of backpacking trips—which explored trail-less boreal forest, alpine tundra, and glaciers—students engaged in independent projects and structured field journal assignments. Curriculum in this pilot program included natural history of Alaska, route planning, backcountry living, Alaskan land management, and interdisciplinary research methods for the field. Student-driven projects included a sociology of group dynamics in the backcountry, artistic works about local species, research on the relative abundance and distribution of local small mammals, site assessments for backcountry management for Wrangell-St. Elias National Park and Preserve, a case study on climate change mitigation/environmental policy, and a baseline for glacial extent and shrubline along a backcountry travel route known as the Kuskulana Traverse. Visiting experts and local community members contributed content through lectures and guest speaking during the summer. A course reader carried in the field included articles and book chapters on the practice of natural history, local geology, climate change, succession, the concept of wilderness, and indigenous politics. Students demonstrated their learning at the end of the program in a final exam, an oral presentation delivered to peers and town residents, and a written project report on field data collected during one of the backpacking trips. Learning objectives included: 1) Gaining field observation and note-taking skills, encompassing methods for documenting and sharing findings in diverse formats; 2) Designing a field research project, collecting field data, managing, synthesizing, and presenting interpretations of this data to peers, faculty and the public in written and oral presentations; and 3) Applying concepts of wildness/wilderness, management/ preservation, and sustainability to the real world.

EVALUATION:
Written by: Aliette Frank

Ryan was an effective and thoughtful wilderness traveler. He expressed an interest in learning more about different styles of leadership and the range of duties required to support a group wilderness experience. Ryan consistently offered to help teach a skill set he possessed. Ryan went the extra mile and volunteered for additional duties around the Wrangell Mountains Center.

In the backcountry, Ryan proved himself to be a resilient participant, regardless of weather or terrain. At times, Ryan needed additional support to motivate himself to work independently. Ryan's attitude remained responsive to feedback and he continually strived to be a capable leader. In terms of Ryan's artistic field journal, we encourage Ryan to seek out classes with structured journaling time, so he can further develop his writing and drawing skills with more supervision. Ryan recognized when it was necessary to be courageous and strive ever-on when crossing an unknown section of glacier. Ryan was able to discern when it was critical to support the varying abilities of the other group members. After the completion of this summer, Ryan is moderately well prepared to lead backcountry trips, travel solo, and continue his field research on the interplay of sociology, nature, and wilderness.

In the area of Natural History of Alaska, Ryan demonstrated very good understanding of the central themes of Wrangell-St. Elias species identification, ecosystem characteristics (including rock formations), and different ways of being and knowing in the practice of natural history, based upon Ryan's written final exam. In terms of his competence in the area of People and Protected Areas, Ryan also demonstrated very good understanding and proficiency of historical and contemporary thought and use of protected

lands, and outcomes of different environmental policies and land/wildlife management, based on his written final exam.

Ryan conducted an independent research project on Sociology. Based on his reflective, creative non-fiction narrative about group dynamics (which drew from his own experience and upon past and in-course literature), along with his accompanying oral presentation, Ryan demonstrated an advanced understanding of research methodology, data collection, data interpretation, and presentation. We recommend Ryan spend more time reflecting on his experience in wilderness in group settings, and expand his inquiry to different landscapes to further develop his mastery of sociology.

SUGGESTED COURSE EQUIVALENCIES (in quarter hours) TOTAL: 16

4 - Natural History of Alaska
8 - Independent Research Project in Sociology
4 - People and Protected Areas

Neese, Ryan J — A00400610
Last, First Middle — Student ID

April 2017 - June 2017: Trees and Native People

16 Credits

DESCRIPTION:
Faculty: Dylan G. Fischer, Ph.D., Frances V. Rains, Ph.D.

In this program, we closely examined the natural history and diversity of trees as well as how Native Peoples have interacted with trees and forest communities. We addressed questions such as how do trees work? How do we identify different species in our region? How old are trees? How did Native Peoples maintain forests? How did these forests change with colonization? How have different types of forests affected the cultures and lifestyles of Native Peoples in different regions? We used a multidisciplinary approach to our studies in order to understand tree form and function and Native relationships with trees as distinct subjects. Students learned about basic botany, dendrology, history, tree identification, geography, Native studies, and ecology. Inherent in our work was the recognition that historic relationships between Native Peoples and trees requires a deeper understanding of Native existence on the North American landmass for over ten thousand years, as well as the impact and consequences of five hundred years of colonization. Understanding the history of trees, and tree function, requires acknowledging deep time that goes back even further in natural history and evolution. Accordingly, our studies were divided between a focus on natural history of trees (especially trees of The Northwest), a broad history of Native/forest relationships across time and geography, and the ways colonization affected the forest ecosystems upon which many Native Nations had depended upon for thousands of years. Students were challenged to reconcile popular beliefs about the roles of trees with deeper hands-on observations.

We used seminars, lectures, day trips, workshops, labs, and an overnight field trip to explore the subject matter in the program. Students traveled through the forest lands of the Quinault Reservation, local forests, National Parks, and arboretums. They were exposed to the diversity of trees in The Northwest, as well as trees from around the world planted in our region. Students had exams, essays, labs and final projects as a means for evaluating learning about trees. Students also read texts by Native authors, watched Native films, had a guest speaker, visited a tribal museum, and attended a two-day indigenous climate justice symposium. Learning in this arena was assessed with regular seminar papers, essays, seminar commentary, and a final synthesis paper.

Texts used in the program included *Trees: Their Natural History* (2nd ed.) by Thomas, *Northwest Trees* by Arno, *The Sibley Guide to Trees*, by Sibley, *American Indians and National Forests* by Catton, *Living on the Edge* by George, and *Native Peoples of the Olympic Peninsula: Who We Are* by Wray.

EVALUATION:
Written by: Dylan G. Fischer, Ph.D. and Frances V. Rains, Ph.D.

In our program, Ryan was an engaged member of a dedicated learning community examining tree biology, dendrology, and the cultural and colonization history of native communities in North America. The text below provides descriptive evaluations of Ryan's work in discrete portions of our academic program associated with academic credit.

For the Native Peoples portion of the Program, the lectures, films, readings, seminars, and experiential learning opportunities [e.g., Visit to a Tribal Museum; Indigenous Climate Justice Symposium] were designed to facilitate student learning across significant differences, while engaged in interdisciplinary study, as a means of developing student engagement with real-world issues in all their complexity. Attendance, therefore, was a factor in the credits as well as each student’s written work. Across the quarter, Ryan had excellent attendance, and was an active participant in all parts of the Native Peoples’ portion of the program. As well across the quarter, students were required to submit five seminar papers

on the readings in the Catton, Chief George, and Wray texts. Ryan's seminar papers demonstrated a solid grasp of the sweeping effects of colonization on the Native Nations and the forest ecosystems where they lived for thousands of years. Through these papers, he showed a good ability to think critically about the ways in which Indigenous Knowledge and Native Fire Science was often at odds with the Settler Society's views of fire and of trees as a economic commodity. In the seminar discussions, Ryan was an active listener, often contributing after others had commented. His comments always demonstrated an astute grasp of the material.

Students attended the two-day Indigenous Climate Justice Symposium held at Evergreen's Longhouse. It included panels of: Pacific Northwest Tribal Leaders, Tribal Educators and Community Members; Evergreen State College Students; and International Indigenous Climate Justice Advocates. Panelists presented on climate change effects, fossil fuel resistance, sustainability projects, cultural revitalization, resilience and adaptation. Students were required to submit a reflective paper on at least four sessions of the Symposium identifying key learnings in the Indigenous Knowledge drawn from the Symposium and make connections to our program. Ryan wrote a solid, candid paper that offered not only insights into the sessions but also connections to our readings. For example, he noted the discussion of Treaty Rights expressed by the Vice President of the Quinault Nation and resonated with his understandings from the texts and how treaties might be used today to help protect Tribes fighting the fossil fuel industry. In the paper, he also shared how the final speaker of the afternoon offered valuable insights on allyship.

Students were also required to write a synthesis paper of their learnings across the quarter addressing the question: *How has learning about Indigenous Knowledge and Native Peoples changed/affected your understanding of Trees?* To respond, Ryan wrote a strong paper on a the Native history and trees such as "…Western Red cedar, Big leaf Maple, Douglas Fir, Black Cottonwood, Sitka Spruce, Western Hemlock…" identifying, along the way, the many Native uses of these Trees. In particular, he discussed the many uses of the Western Red Cedar by the Northwest Coast Nations. He highlighted the value of seeing many examples in the Suquamish Tribal Museum. He observed how the bark could be woven into hats, baskets, clothing and fishnets of many sizes and how seeing this reinforced his reading about the Makah's use of Western Red Cedar. As well, from the lectures, he pointed out how Indigenous knowledge of Fire Science was used to control burns, improve soil nutrients, reduce crown fires and manage pests; how Western Red Cedar was carved into different types of totem poles in the upper Northwest; and how a variety of trees might be used for medicine, food, tools, weapons, sports and musical instruments. Although the paper was a page short, it was well done with many examples to support his points.

Each student had to complete weekly written reports detailing what they learned about Dendrology, Introduction to Botany, and Introduction to Ecology and Natural History, from lectures, labs, and textbooks. Students were also responsible for peer-reviewing each-other's weekly reports. When students took advantage of this opportunity to showcase their knowledge on a weekly basis, they were able to show tremendous learning about the material. Ryan's work in this component of the program was generally excellent. Students were also required to integrate current learning with past knowledge, and Ryan did an excellent job with an essay reflecting on how learning in dendrology changed the understanding of a tree that each student had known in their past.

For our labs, students were required to use micro-and macroscopic observations in field and laboratory sessions. Ryan's performance on leaf, wood, sapling performance, and flower anatomy labs was generally excellent. Students were also tested weekly in practical exams, and had a final practical exam on more than 23 tree species. Ryan's performance on practical exams was excellent, demonstrating mastery in identification skills for more than 20 of our most common Pacific Northwest trees.

For a final project, students were required to research a single tree species and produce a poster presentation on the natural history and traditional cultural uses of that tree species. Ryan chose *Olneya*

Neese, Ryan J — A00400610
Last, First Middle — Student ID

tesota (desert ironwood) and produced an excellent poster on the species. Similarly, Ryan did well on a project researching trees used to make musical instruments throughout the world.

SUGGESTED COURSE EQUIVALENCIES (in quarter hours) TOTAL: 16

4 - Dendrology
2 - Introduction to Botany
2 - Introduction to Ecology and Natural History
4 - Native American Studies/Traditional Indigenous Knowledge
4 - Native American Studies/Trees and Pacific Northwest Native Nations

Neese, Ryan J — A00400610
Last, First Middle — Student ID

January 2017 - March 2017: Introduction to Environmental Studies: Land

16 Credits

DESCRIPTION:
Faculty: Dylan Fischer, Ph.D., Shangrila Wynn, Ph.D.

This program was an interdisciplinary introduction to the field of Environmental Studies designed for freshmen and sophomores. Using the connection between forests and climate change as a central theme, it explored the complexities of environmental issues in terrestrial environments, demonstrating how social phenomena and natural environments are intertwined. For the social science component, we explored various theories about the environment-society relationship, including those that focus on population growth, economic growth, the commons, environmental justice, and political economy. Students applied this learning to understand environment-society dynamics pertaining to forests and climate change.

For the natural science component, students learned about climate change and forest ecology, basic forest measurement methods, carbon sequestration in forests, and plant identification in the Pacific Northwest. Students acquired hands-on experience working with data collection in forests in the region. Students then learned about how these measurements are related to global carbon budgets and climate change. Student learning was facilitated by a combination of weekly lectures in environmental social science and forest ecology, data analysis labs, documentary films, seminars, weekly field labs, and a 3-day field trip to various locations in the Olympic Peninsula.

Required course texts included *Forest measurements*, 2015, by Thomas Eugene Avery, Harold E. Burkhart; *Environment and Society,* 2013, by Paul Robbins, John Hintz, and Sarah A. Moore; *The Big Burn: Teddy Roosevelt and the Fire that Saved America,* 2010, by Timothy Egan; *The Final Forest: Big Trees, Forks, and the Pacific Northwest,* 2010, by William Dietrich; and additional readings from peer reviewed journals, magazines, and newspapers. Assessment of student learning was made on the basis of attendance and participation in required program activities, as well as evaluation of student work in lab and workshop assignments, quizzes, essays, and a final research project entailing group work and oral presentation.

EVALUATION:
Written by: Dylan Fischer, Ph.D., and Shangrila Wynn, Ph.D.

Ryan was a dedicated and very effective member of our learning community in the program 'Introduction to Environmental Studies: Land' during Winter of 2017. Assessments of Ryan's work in specific credit-bearing components of the larger program are as follows.

Credit in Forest Methods, Measurements and Ecology was based on student work on exams, computer labs, field labs, and a group presentation on underrepresented voices in forestry. We had two major exams on forest measurements concepts. These exams mixed familiarity with the text, ability to do basic trigonometric and unit conversion calculations, and real-world concepts related to forest ecology and carbon cycling. Ryan's performance was very good on both exams. Throughout the quarter, a series of labs introduced students to Excel spreadsheets, the use of equations, and finally calculations to compute forest Carbon. Ryan's performance (and demonstration of learning) was generally excellent. Ryan was required to keep a field-book recording every lab exercise and all relevant field data. Field-books were checked regularly to ensure labs were completed and to encourage students to develop organized field note-taking skills. Ryan's field-book was generally excellent. Students also did research on underrepresented voices in forestry. Students were required to share their work and biography with the class in a short presentation. Ryan's group presented on Lilla Leach, an important Oregon botanist in the 20th century who made major contributions to our understanding of the flora of The Northwest.

Neese, Ryan J — A00400610
Last, First Middle — Student ID

Climate Change and Forests credits were awarded on the basis of student performance in two in-class quizzes, two workshop assignments, two take-home essays, and preparation for and participation in weekly seminars. Ryan's work in each of these assessment areas was overall of very good quality. The quizzes assessed understanding of various social science approaches to studying environment-society dynamics based on the *Environment and Society* textbook via a combination of true-or-false, multiple-choice, and short-answer questions. Ryan's performance in the quizzes was consistently good. The workshop assignments included an ecological footprint quiz, and a qualitative content analysis exercise involving the use of the LexisNexis database and the qualitative data analysis software Atlas.ti to code and analyze media representation of a specific environmental issue. Ryan completed both of these assignments satisfactorily.

The essays offered students the opportunity to engage in argumentative writing. For the first essay, students had the task of defending a position arguing whether population-centered, market-centered, or commons-centered explanations of the people-environment relationship was most compelling. For the second essay, they were asked to argue whether a structural analysis of environmental change and social inequities revealed the inherent connections between them and to discuss the implications of their argument for environmental problem-solving. Both essays written by Ryan demonstrated excellent writing ability. His arguments were clear, compelling, persuasive, and well supported by evidence from the text.

Ryan was an engaged and effective participant in seminar discussions. He had a near perfect attendance record in program activities, including in seminar. Seminar activities included structured and open-ended discussion of assigned readings in small groups as well as broader settings. Ryan made substantive contributions to seminar discussion, offering insightful observations, nuanced critiques, and modeling respectful ways of expressing differing points of view. Most weeks Ryan also demonstrated excellent preparation for seminar in his written weekly seminar responses that effectively and concisely synthesized key concepts in the reading, and presented sophisticated and critical analyses of the arguments therein.

Finally, students were required to conduct group research on a significant environmental studies issue. The groups were then required to give professional presentations at the end of the quarter on their work. Ryan's group gave a compelling, well-researched, and well organized presentation on the effect of wildfires on Western U.S. forests. They explained key concepts, processes, and phenomena effectively, provided helpful visuals, and coordinated the task of research presentation evenly amongst the presenters, each one taking on a specific research question, to produce a cohesive and comprehensive presentation. Ryan's presentation focused on various natural and anthropogenic factors that contribute to creating wildfires, and delved into the complex relationship between climate change and wildfires. He did an excellent job of presenting a nuanced analysis of this relationship. His presentation was well organized and demonstrated careful preparation. According to his peer evaluations, Ryan was an effective collaborator and contributed equitably to the group project.

SUGGESTED COURSE EQUIVALENCIES (in quarter hours) TOTAL: 16

7 - Forest Methods, Measurements, and Ecology
7 - Environment and Society: Climate Change and Forests
2 - Introductory Research in Environmental Studies

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.