Marshall University Syllabus

Course Title/Number: NRE 120 Discussions in Environmental Science CRN 3383 Section 101

Credit Hours: 3

Semester/Year: Fall 2018

Days/Times/Locations: Mondays, Wednesdays and Fridays 9 to 950 a.m. WAEC 1227

Instructor: Samuel T. Colvin Office: Morrow 111 Phone: 304 696 5432 E-Mail: colvin8@marshall.edu

Instructor Schedule: Fall 2018

Mondays, Wednesdays and Fridays 9 – 950 a.m. NRE 120 WAEC 1227

Tuesdays and Thursdays 930 – 1045 a.m. NRE 212 WAEC 1203

11a – 1215p.m. NRE 111 WAEC 2235

NRE 320 Online only

Office Hours Tuesdays and Thursdays 8 – 915 a.m.

By Prior Appointment Only, Potential Office Hours – Tuesdays and Thursdays 1215 to 2 p.m.

Faculty Meetings – noon every other Friday starting 8/31/18. (8/31, 9/14, 9/28, 10/12, 10/26, 11/9, and 11/30 or 12/7)

*University Policies* By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to www.marshall.edu/academic-affairs and clicking on “Marshall University Policies.” Or, you can access the policies directly by going to www.marshall.edu/academic-affairs/policies/. Academic Dishonesty/Excused Absence Policy for Undergraduates/Computing Services Acceptable Use/Inclement Weather/Dead Week/Students with Disabilities/Academic Forgiveness/Academic Probation and Suspension/Academic Rights and Responsibilities of Students/Affirmative Action/Sexual Harassment

**Policy for Students with Disabilities:** Marshall University is committed to equal opportunity education for all students, including those with physical, learning and psychological disabilities. University policy states that it is the responsibility of students with disabilities to contact the Office of Disability Services (ODS) in Prichard Hall 117 (304.696.2467) to provide documentation of their disability. Following this, the ODS Coordinator will send a letter to each of the student’s instructors outlining the academic accommodation he/she will need to ensure equality in classroom experiences, outside assignment, testing, and grading. The instructor and student will meet to discuss how the accommodation(s) requested will be provided. For more information, access the website for the Office of Disabled Student Services: http://www.marshall.edu/disabled

Below is the current University policy related to incompletes for courses. It will be strictly followed.

"Incomplete: The grade of I (incomplete) indicates that the student has completed three-quarters of the course, but cannot complete the course for a reason that accords with the university excused-absence policy. Students must be in good standing in the class prior to requesting an incomplete. The course instructor decides whether or not an incomplete will be granted and specifies in writing what work the student must complete to fulfill the course requirements. The student has until the end of the next fall or spring semester from the date of receipt of the incomplete grade in which to complete the course, or the instructor may establish an earlier deadline. If special circumstances exist, which prevent the student from completing the course in the prescribed time, the incomplete may be extended with approval of the instructor, the instructor's chair or division head, and the instructor's dean. If the student satisfactorily completes the course in the prescribed time he/she will receive a letter grade. If the student fails to complete the course requirements during the stipulated time, the grade of I changes to a grade of F."

- The Greenbook, Marshall University

*Catalog Description*: Critical thinking course designed to examine and explore issues in environmental science, natural resources and conservation biology.

**Learning Outcomes**

1. **Students will determine the origins of core beliefs and ethical principles, evaluate the ethical basis of professional rules and standards of conduct, evaluate how academic theories and public policy inform one another to support civic well-being, and analyze complex ethical problems to address competing interests.**

**How Practiced** - (a) Reading of text

(b) Class discussions on the precautionary principle, conservation ethic, environmental justice, environmental ethics, species extinction, and the Tragedy of the Commons

**How Assessed** - Written submission on a statement from the text, “The integrity of science depends on following a strict code of ethical conduct.” Page 12 Develop a code of ethical conduct for an environmental scientist. Explain why you included each element of that code.

2. **Students will formulate focused questions and hypotheses, evaluate existing knowledge, collect and analyze data, and draw justifiable conclusions.**

**How Practiced** - (a) Reading of text

(b) Class discussions on the scientific method and evidence, species, ecosystems, terrestrial and aquatic resources, fossil fuels, nuclear energy, renewable energy, environmental health, solid and hazardous waste management, and global climate change

**How Assessed** - (a) Exam one

(b) Exam two

(c) Selection by each student of an environmental issue and development of a plan to study that issue

(d) Design of an experiment / study related to that issue

(e) Summary of research findings on that issue

3. **Students will make connections and transfer skills and learning among varied disciplines, domains of thinking, experiences, and situations.**

**How Practiced** - (a) Reading of text

(b) Class discussions on competition/ cooperation/conflict in nature, environmental treaties and laws

**How Assessed** - (a) Written submission on a question from the text, “In developed countries, it is often said that we are insulated from the physical and biological forces of nature. Do you think this statement is true? Why or why not?” page 6

(b) Written submission on a question from the text, “How does ozone thinning demonstrate the interaction of physical, chemical, and cultural aspects of the environment?” page 6

(c) Written submission on a question from the text, “How is money related to the movement of energy and matter in economic systems?” page 45

(d) Written submission on a question from the text, “How is the flow of energy through natural ecosystems similar to energy flow through economic systems? How are they different?” page 47

(e) Written submission on a question from the text, “How might including the potential for negative economic impact as a criterion for the listing of endangered species affect how the ESA is applied? page 83

(f) Written submission on a question from the text, “Should we use only economic criteria for species conservation and restoration? Elaborate on your answer.” page 89

(g) Written submission on a question from the text, “Can aesthetic and economic reasons for conserving endangered species coexist, or are they mutually exclusive? Explain.” page 89

4. **Students will evaluate generalizations about cultural groups, analyze how cultural groups might affect communication across cultures, evaluate how specific approaches to global issues will affect multiple cultural communities or political institutions, and untangle competing economic, religious, social, political, or geographical interests of cultural groups in conflict.**

**How Practiced** - (a) Reading of text

(b) Class discussion on the Philadelphia trash barge journey

(c) Video on electronic waste handling in China

**How Assessed** - Paper on the impact, implications and cultural aspects of open dumping in Appalachia

5. **Students will analyze real-world problems quantitatively, formulate plausible estimates, assess the validity of visual representations of quantitative information, and differentiate valid from questionable statistical conclusions.**

**How Practiced** - (a) Reading of text

(b) Class discussions on human population, human development index, risk assessment, toxicology, ecosystem productivity, overexploitation of resources, global temperatures, atmospheric carbon dioxide concentrations

(c) Hans Rosling videos Ted Talks on population – “The best stats you've ever seen” and “Global population growth, box by box”

**How Assessed** - (a) Submission of student calculation of individual ecological footprint

(b) Submission of individual student disposal journal

*Text*: Environment Science, Issues, Solutions by Manuel Molles and Brendan Borrell, W.H. Freeman, copyright 2016, ISBN 978-0-7167-6187-7

*Course Requirements/Due Dates*

Course Requirements / Due Dates

Class Attendance (minus 3 for each unexcused absence)

10 activity submissions   1: 8/31, 2: 9/7, 3: 9/21, 4: 9/28, 5: 10/19, 6: 10/26, 7: 11/2, 8: 11/9, 9: 11/30, 10: 12/7

Environmental Issue Plan 9/14

Environmental Issue Design of Experiment 10/5

Exam One (text chapters 1 - 8) 10/10

Paper on open dumping 10/12

Environmental Issue Summary of Research Findings 11/16

Exam Two (final, not comprehensive, text chapters  9 - 14) 12/14

Except for the first Friday 8/24, submissions are due on each of the remaining Fridays in the semester: 8/31, 9/7, 9/14, 9/21, 9/28, 10/5, 10/12, 10/19, 10/26, 11/2, 11/9, 11/16, 11/30, and 12/7. The due date for each submission will also be the cutoff date for that submission. No classes will be held on those dates allowing students to work on the required submissions instead. Because the instructions and due / cutoff dates have been available from the start of the semester and class release time is being given, no late submissions will be accepted or graded.

The Plan, Design of Experiment and Summary of Research Findings as submitted to MU Online will comply with the University assessment requirements for NRE 120 as a critical thinking course.

*Grading Policy*

Percentages and Points

Grades: A 90-100% 900 to 1000 points B 80-89% 800 to 899 points

C 70-79% 700 to 799 points D 60-69% 600 to 699 points F < 60% 0 to 599 points

*Course Evaluation* - Students will be evaluated through:

Class Attendance (minus 3 for each unexcused absence) 100 points

10 activity submissions (8 written, ecological footprint and disposal journal) 40 points each = 400 points

Paper on open dumping = 50 points

Exam one = 100 points

Exam two = 100 points

Environmental issue \* = 250 points:

Plan (50 points), Design of experiment / study (100 points), Research findings (100 points)

Total available points = 1,000

\* Student submission to MU Online of the environmental issue plan, design of an experiment and research paper will be used to assess Inquiry-Based Thinking through Blackboard Outcomes and will be worth a combined 25% of a student’s grade.

*Course Policies*

1. Plagiarism or cheating will result in no credit for that activity and may result in further University sanctions.

2. MU Online is the only acceptable vehicle for submission of work. Such submission is required so that your work becomes part of the permanent record of the class.

3. Work not submitted to or available on MU Online may be penalized or not accepted for grading at the discretion of the instructor.

4. Late submissions to MU Online will be accepted with penalty until the cutoff. After the cutoff, MU Online will not allow submissions.

5. Please do not email submissions to me. They may not be graded at my discretion.

6. Grades will be reported in MU Online My Grades allowing students to determine their grade status anytime, especially prior to course withdrawal deadlines and prior to the final.

7. Assignments will be graded with comments (if any) within two weeks after the due date.

8. It is the student's responsibility to check grades and comments (if any) to assure the proper receipt of and credit for assignments.

9. There is no extra credit or re-testing. Scaling may be used at the discretion of the instructor in grading submissions.

10. If you need to earn a certain grade in this class for any reason (scholarship, aid, graduate school, etc.), you should devise a personal plan now to work toward your desired grade.

11. Final grades are based on the number of points earned out of 1,000. Only point calculations prepared by the instructor are official.

12. At the end of the course, the instructor will consider in his discretion whether to award extra points to a student less than five points (actual, not percentage) away from the next grade level provided the student has completed all assignments in a timely fashion.

13. No work received after the class ends will be graded.

14. Please do not contact me during exam week or after the class ends attempting to negotiate a better final grade.

15. A calm and respectful learning atmosphere is expected to be maintained during class. Any person who chooses to create or contribute to a disruptive atmosphere may be requested to leave the room at the discretion of the instructor. Refusal to comply with such a request may lead to referral of the matter to appropriate University officials.

*Attendance Policy*

Students who consistently (2 or more times) come to class late may be subject to a reduction in points not to exceed a one letter grade reduction at the discretion of the instructor.

Attendance in class is recorded.

Absences will be excused only with written excuses in accordance with University attendance policy. Students are responsible to make up any work missed because of an excused absence at the next attended class after that absence. No credit will be recorded (1) unless the missed work is made up at the next attended class after the absence and (2) until the University approved excuse is received by the instructor. Only the instructor can amend this policy at his discretion in cases of extreme hardship, but is always willing to listen.

*Contact the Instructor*

Questions from students about the class may be sent by e-mail to colvin8@marshall.edu or asked in

person at class, during office hours or at other times in accordance with the instructor’s schedule below.

colvin8@marshall.edu is the only e-mail address to which I respond. Please do not send e-mails to any other address or through forums.

Because of the phone system, I can only return local phone calls and often cannot return some cell phone calls. I normally check and return phone calls and e-mails only when on campus, but I do respond if at all possible.

I strive to respond to phone calls and e-mails within 24 hours of receipt and will respond if at all possible.

*Due Dates / Changes in Schedule / Inclement Weather*

Due dates and assignments are subject to change. Due dates will only be moved back, not forward.

If the instructor must change the time or place of a scheduled event, he will make every effort (1) to announce the change in a prior class, (2) to e-mail students in advance and / or (3) at a minimum to have a sign posted on the original room with the instructor’s name on the sign. The same type of notification can be expected if the instructor must cancel a scheduled session.

Classes will be held as scheduled unless the University cancels classes because of inclement weather.

*Copies / Copyright*

Submissions will not be returned. Please keep copies of all work submitted.

Some materials used in this class may be copyrighted and should not be shared with individuals not enrolled in this course.

*Course Conduct*: Students will work in groups and/or individually to examine the world’s current environmental status. Students will gather information from various sources including the Internet, books, and other scientific references.

The instructor is responsible to: 1. Introduce concepts and issues. 2. Model a scientific approach. 3. Evaluate student submissions. 4. Make interesting and relevant presentations.

Students are responsible to: 1. Read text 2. Participate in activities 3. Submit individual assignments and assure their proper receipt. 4. Take tests. 5. Remain interested and apply learning to life.

*COURSE OUTLINE AND SCHEDULE*

Important Dates - Fall 2018

August 20, Monday - First day of classes

August 20, Monday - August 24, Friday - Schedule add/drop

September 3, Monday - Labor Day Holiday - University closed

October 8, Monday - noon, Freshmen/Sophomores midterm grades

October 26, Friday - Last day to drop a full semester individual course

November 19, Monday - November 24, Saturday - Thanksgiving break

November 26, Monday - Classes resume

December 3, Monday - December 7, Friday - "Dead week"

December 7, Friday - Last class day, Last day to completely withdraw from fall semester

December 10, Monday - Exam day

December 11, Tuesday - Exam day

December 12, Wednesday - Study day

December 13, Thursday - Exam day

December 14, Friday - Exam day

December 15, Saturday - Winter Commencement, Big Sandy Superstore Arena

December 17, Monday - noon, Final class grades due

Week 1 8/20 - syllabus, survey        8/22 - syllabus, get acquainted      8/24 - explain assignments

Week 2 8/27 - Text Chapter 1          8/29 - Chapter 1                               8/31 - Submission 1 due, No class

Week 3 9/3 - Holiday, No Class        9/5 - Chapter 2                                 9/7 - Submission 2 due, No class

Week 4 9/10 - Chapter 3                   9/12 - Chapter 4                              9/14 - Plan due, No class

Week 5 9/17 - Chapter 5                   9/19 -  Chapter 5                             9/21 - Submission 3 due, No class

Week 6 9/24 - Chapter 6                   9/26 - Chapter 6                              9/28 - Submission 4 due, No class

Week 7 10/1 - Chapter 7            10/3 - Chapter 8                     10/5 - Design of experiment due, No class

Week 8 10/8 - Review             10/10 - Exam One (Chapters 1 - 8)   10/12 - Paper on dumping due, No class

Week 9 10/15 - Chapter 9                  10/17 - Chapter 9                            10/19 - Submission 5 due, No class

Week 10 10/22 - Chapter 9                10/24 - Chapter 10                          10/26 - Submission 6 due, No class

Week 11 10/29 - Chapter 10              10/31 - Chapter 11                          11/2 - Submission 7 due, No class

Week 12 11/5 - Chapter 12                 11/7 - Chapter 12                            11/9 - Submission 8 due, No class

Week 13 11/12 - Chapter 13               11/14 - Chapter 13                 11/16 - Research Findings due, No class

11/19 - 24 Thanksgiving Break

Week 14 11/26 Chapter 14                 11/28 - Chapter 14                          11/30 - Submission 9 due, No class

Week 15 12/3 - Review                        12/5 - Conclusion                            12/7 - Submission 10 due, No class

Exam Two (Final, not comprehensive, Chapters 9 - 14)   Friday, 12/14/18    8 - 10 a.m.

The course ends at 10 a.m. Friday, 12/14/18

Central Question and Expected Student Learning from Each Text Chapter

Chapter 1 - How do science and values help address environmental issues?

Evaluate what makes up the environment, what science is, and how science can address uncertainty.

Analyze the global environmental impact of humans.

Determine how personal views affect how environmental problems are addressed.

Chapter 2 - How can linking ecology and economics help reduce societies’ environmental impacts?

Evaluate the nature and movement of matter and energy in ecosystems and economic systems.

Analyze the environmental significance of energy demand, economic models, and the Tragedy of the Commons.

Determine the links among the environment, economics, property rights and community-based management.

Chapter 3 - How can we protect species in an increasingly human-dominated world?

Evaluate the ecology of populations and interactions in communities.

Analyze the threats to survival of species.

Determine the legal, social, and economic factors needed to conserve and restore threatened and endangered species.

Chapter 4 - How can we protect Earth’s diverse ecosystems?

Evaluate influences on patterns of species, ecosystem, and geographic diversity.

Analyze human impacts that threaten species and ecosystem diversity.

Determine the keys to sustaining species and ecosystem diversity.

Chapter 5 - How can we achieve sustainable human populations?

Evaluate the distribution and dynamics of global human populations.

Analyze the environmental impact of fertility, development, resource consumption, and migration.

Determine the social, political, and economic factors that support sustainable human populations.

Chapter 6 - How can we meet human needs for freshwater, while avoiding or reducing environmental impact?

Evaluate the hydrologic cycle and how climate can affect it.

Analyze the global demand for and availability of water.

Determine the individual, industrial, and societal tactics for sustaining water supplies.

Chapter 7 - How can we produce food and forest products while minimizing environmental impact?

Evaluate how the physical environment and biodiversity influence the availability of terrestrial resources.

Analyze the environmental impacts of harvesting terrestrial resources.

Determine tactics for minimizing the impact of farming, ranching, and forestry.

Chapter 8 - Can we sustainably manage fisheries and aquaculture?

Evaluate ways fish and shellfish are harvested and how the physical environment influences the availability of aquatic resources.

Analyze the impacts of humans on aquatic resources.

Determine approaches for developing more sustainable aquaculture and fisheries.

Chapter 9 - How can we mange nonrenewable energy resources in a way that reduces environmental harm?

Evaluate the main fossil fuels utilized by modern society.

Analyze the environmental impact of fossil fuel extraction and nuclear power.

Determine the tactics for mitigating the environmental impacts of using fossil fuels and nuclear power.

Chapter 10 - Can we develop renewable energy resources to help sustain a thriving economy without adversely affecting the environment?

Evaluate the renewable sources and technologies of solar, wind, hydroelectric, hydrokinetic, and geothermal energy.

Identify the environmental and human impacts of renewable energy.

Investigate potential strategies to maximize the sustainability of renewable energy.

Chapter 11 - What is the relationship between the environment and human health and how can we manage that relationship?

Evaluate the toxic substances and pathogens in the environment and their effects on humans.

Analyze the environmental and human health consequences of exposure to toxic substances and pathogens.

Assess the risk of exposure of toxic substances and pathogens.

Chapter 12 - How can we reduce the environmental impact of solid waste and dispose of hazardous waste safely?

Evaluate the types of solid and hazardous waste.

Identify the problems in storing and disposing solid and hazardous waste.

Analyze the tactics for handling solid and hazardous waste.

Chapter 13 - How can we control and reduce environmental pollution?

Evaluate the sources and movement of pollution.

Determine how air, water, and soil pollution impact biodiversity, ecosystems, and human health.

Analyze the effectiveness of pollution regulation and other tactics to treat polluted environments.

Chapter 14 - How can we mitigate and adapt to the environmental and social impacts of climate change?

Evaluate the factors that control climate and global temperatures.

Analyze the causes and impacts of changes in global climate.

Determine the local and international tactics which may mitigate changes in global climate.

INSTRUCTOR BIOGRAPHICAL SKETCH

Sam Colvin received a bachelor's degree and a master's degree from WVU. He has taken postgraduate courses at Marshall.

Sam has worked on environmental issues since the first Earth Day in 1970. He was appointed as the first WV Youth Adviser to the newly-formed U.S. Environmental Protection Agency. As a student, he worked on a federally funded environmental education grant developing and testing course materials from elementary school to college level. He served a six month internship with the WVU Extension Environmental Education Specialist.

Sam has been employed at the city, county and state levels in West Virginia. He was an Extension Agent for two years, administrative assistant for admissions to the MU School of Medicine for six months, and the Community Development Director of Huntington for three years. He served as Executive Director of the WV Resource Recovery-Solid Waste Disposal Authority for eleven years. He was a market development representative for a major environmental company for one year. He has operated an environmental consulting business since 1990.

Sam has been a member of the WV Solid Waste Management Board and the WV Water Quality Advisory Committee. He served two years as Executive Director of the Ohio River Basin Consortium for Research and Education.

Sam's major environmental emphasis is solid waste, including recycling and composting. He is a certified yard waste facility operator and has received the National Backyard Compost training and the Compost Facility Best Management Practices training.

Sam has taught at Marshall since the spring of 2000. He has taught First Year Seminar 100, Integrated Science (ISC) 211 Living on Earth, Integrated Science and Technology (IST) 120 Connections I, IST 220 Connections II, Natural Resources and Environment (NRE) 111 Living Systems, NRE 120 Discussions in Environmental Science, NRE 212 Energy, NRE 320 Nature of Environmental Problems, and NRE 321 Resolution of Environmental Problems. He has been involved in two Campus Compact service learning grants. He has completed Quality Matters for online teaching, critical thinking and service learning training.

Sam has completed Sustainability Awareness, Pollution Prevention and Environmental Management System training sponsored by WV Department of Environmental Protection, the National Pollution Prevention Roundtable and Bridgemont Community & Technical College.

His current research and service projects include: (1) Monitor and modify as needed the IST 320 online course; (2) Continue work on improvement of the impaired Fourpole Creek; (3) Continue evaluation of state-mandated waste reduction goal of 50%; (4) Monitor the reclamation of the former City of Huntington landfill; (5) Study the WV solid waste management system.

Sam lives in rural Wayne County, WV with his wife, Prudence. Prudence graduated from Marshall with bachelor's and master's degrees and is now retired after 34 years as an educator – 27 as an elementary teacher and 7 as a reading coach. They are active as volunteers in church and community activities. Sam is a volunteer assistant high school baseball coach.

They have two sons.

Andrew is a May, 2013 environmental engineering graduate of the United States Military Academy at West Point, an August, 2014 honor graduate of the Naval Dive School, a graduate of the Army Air Assault Course, a paratrooper, and a licensed professional engineer. He was formerly an engineer dive officer and professional diver for the Army. In 2015 he returned from deployment in the Middle East. He is currently a captain in the Army serving as a special operations – civil affairs officer.

Samuel graduated in May, 2014 with honors from the University of Charleston and was selected as Senior of the Year. He served as battalion commander of the Army ROTC combined programs for WV State, Glenville State, WVU Tech and the University of Charleston and was named Cadet of the Year. He is currently a captain in the Army serving as a military intelligence officer, is a paratrooper, and graduated from the Army Reconnaissance Course in 2015. He is a licensed private pilot and a commercial drone pilot.