



Syllabus: Environmental Science 12 – Bryant-Taneda

## Walnut Grove Secondary School

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### Course Title/Teacher

**IDS 10/11/12 Environmental Science– J. Bryant-Taneda**

### Course overview or summary

Independent Study (IDS) 10/11/12 Environmental Science is designed so students learn about the world in which they live. IDS Environmental Science is a course for students who are interested in individualized learning. Students will research their own course work as it ties into course curriculum as well as participate in off campus field work. Environmental Science respects the needs for water, air, and earth, as well as, peace, justice, and human rights for all through positive ways of reaching out: assisting locally and globally in developing countries around the world. Students will take on the responsibility of helping raise awareness and support the water initiatives of *Education First – Costa Rica*. This course transcends subject matter and age level, and focuses on creating global citizens.

WGSS has *Flex* 42 minutes per day; it is expected with IDS Environmental Science students will periodically use Flex for assigned student work.

### Course objectives

Through self direction, students learn to and class curriculum to respect, value, and celebrate other cultures. Students learn with like minded peers about the environment, vulnerable countries, and view them from many perspectives. Students will become socially and environmentally responsible; students are expected to be actively involved in projects aimed towards environmental issues and solutions to current problems. This could include helping in the local community or raising awareness of issues on a local and global scale. Students will have an informed understanding of justice, human rights and responsibilities and how that affects the environment. Students will listen to speakers from various organizations such as *Education First – Costa Rica*, as well as school board officials and community leaders. In the place of a textbook for this course, it is expected that students will spend time on the internet gaining information from material sources and researching various organizations. Whether students choose to pursue a career related to environmental science, developmental studies, global education, or justice, critical thinking will be of great value.

### Outline of course content and skills

Please note that the units taught, their length, and their order will depend upon such variables as class, composition, availability of resources, and time tabling constraints.

We will begin with an overview of environmental science, scientific method, and local environmental issues. We will focus on global issues, and learn about environmental science as it pertains to the Global South, also known as developing countries. We will look at Costa Rica as a case study in order to obtain an understanding of the Global South, and how we can ethically support others.

1. 10% **Scientific Method:** Data Collection, Critical Thinking, and Bias
  - A. Introduction to a quick history of Environmental science and Developmental studies
  - B. Scientific Method: Data Collection with the purpose to reclaim water
  - C. Reclaimed, recycled, and reused water proposals
  - D. Current Events (conservation, choice)
2. 15% **Global Water Systems**
  - A. **Human actions affect water security**



Syllabus: Environmental Science 12 – Bryant-Taneda

- i. Parameters (alkalinity, pH, dissolved oxygen, phosphate, temperature, turbidity, dissolved solids, nitrate, hardness, bacteria...)
  - ii. Bio-indicators (species range of tolerance)
  - iii. Species diversity indices (Shannon-Weiner diversity index)
  - B. Water availability (water cycle, scarcity, global water crisis, trends)
  - i. Use (personal, industrial, commercial, agriculture...)
  - ii. Conservation and choices (laws, cleanup, stewardship)
  - iii. Natural disasters
  - iv. Deforestation
  - v. BC water: Nestlé
  - vi. Alberta Oil Sands
3. **15% Global Warming and Climate Change**  
Human activities affect global climate
- A. Weather and climate
  - B. Greenhouse gases
  - C. Energy balance (conduction, radiation, circulation)
  - D. Sinks and sources (carbon dioxide, nitrogen oxide, methane)
  - E. Impact on Society: State of the Village Project
    - i. Demographics, Life Expectancy, and Environment
    - ii. Mitigation (bike lanes, alternate energy, urban green spaces, regulations, building -LEED)
    - iii. Personal choices (home energy use, sustainable transportation, vegetarian/alternative diet, recycle/upcycle)
4. **20% Land Use and Sustainability: Sustainable land use and food production will meet the needs of a growing population**
- A. Soil Quality (type, texture, moisture, microbes)
  - B. Land use practices (landfills, deforestation, erosion, urbanization, food production)
  - C. Food security
    - i. Food availability, supply, and distribution
    - ii. Food and water security
    - iii. GMOs
    - iv. Roles organizations play in distribution
    - v. Private sector development - *Fair trade*
    - vi. Open wood fires cooking method implications (for girls' education and women's health)
  - D. Food technologies (pollination, crop rotation, fertilization, ecological knowledge)
  - E. Land management (local plantings, xeriscaping, green spaces, reforestation, parks, ALR)
  - F. Personal choices
    - i. 100 mile diet, composting, gardens, organic
    - ii. Non Governmental Organizations NGO: State of the NGO Project
      - a. Geography and Demographics
      - b. Ethical leadership (skills training, local leadership and solutions)
      - c. Mitigation (seed/crop production, alternate energy, regulations)
      - d. Personal choices (sustainable projects, recycle/upcycle)
5. **20% Global Environmental Changes: Living sustainably supports the well being of self, community, and the earth**
- A. Environmental impacts of population health and growth
    - i. Population and Standard of Living
    - ii. Human development index HDI
    - iii. Gapminder–H. Rosling: a fact based worldview
  - B. Environmental ethics
    - i. Privilege, poverty, and responsibility
    - ii. Global North and Global South
    - iii. Living, profit, and equity
    - iv. Labour and slave labour
    - v. Businesses and labour practices
    - vi. Fair trade and fair wage



## Syllabus: Environmental Science 12 – Bryant-Taneda

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| vi. International Labour Organization ILO   | vii. Gross Domestic Product GDP                    |
| viii. Most Economically Developed Countries MEDCs   |  |
| ix. International Monetary Fund IMF   |  |
| C. Justice, Conflict, and Peace   |  |
| i. Civil war, rights, & disobedience  | ii. Crisis – Terrorist organizations: ISIS         |
| iii. Awareness: human rights & violations   | iv. Hope, hopelessness, volunteer help             |
| v. Peace  |  |
| D. Perspectives   |  |
| i. First People   | ii. Displaced People and Refugees (Syria, Ukraine) |
| E. Gender and Equality  |  |
| i. Human trafficking  | ii. LGBTQ  |
| 6. 15% Local and Global Perspective & Solutions (ongoing through the year)  |  |
| i. NGOs   | ii. Student participation in local projects        |
| 7. 10% Student Passion/Inquiry Project (ongoing through the year or developed at the end of the year for 60% of Final Exam) |  |
- Other areas selected for study will include those considered important in today's society, 21<sup>st</sup> C learning, as well as meaningful for students in the course. Students will be challenged to relate Global Education concepts to their own lives.

### Procedures for Assessment and Evaluation

Students' work in Global Education is evaluated on an on-going basis. Students will be evaluated on the basis of assignments, projects, research, investigation, and group work and discussions. All tasks will be graded on writing and critical thinking skills as well as on content that is relevant to the particular assignment.

#### WEIGHTING and TASKS:

- 1.\* 10% Scientific Method and Current Events
2. 15% Global Water Systems
3. 15% Global Warming and Climate Change
4. 20% Land Use and Sustainability
5. 20% Global Environmental Changes
- 5.\* 10% Student participation in local and global perspective and solutions
- 6.\* 10% Student Passion Project

\* These could be ongoing and/or connect throughout the year

#### Tasks:

Projects (formative and summative)

Assignments (formative and summative)

Group work and discussions (formative and summative)

Quizzes and Final Exam/Student Project (formative and summative)

Vocabulary Quizzes are scheduled once every two weeks) with focus on unit vocabulary.

**References** (Bibliography) must accompany all work handed in.

Group work and discussion consists of informal and formal discussions. Projects focus on the experimental/scientific method. Online articles and research is often the basis for group review and discussion. The basis for group discussion may be classroom handouts, activities, or discussion questions. Participation projects consist of students helping in the local community or raising awareness of issues on a local and/or global scale

#### WEIGHTING for each TERM:



## Syllabus: Environmental Science 12 – Bryant-Taneda

Term 1 – Term 3 – approximately 80% (cumulative grade book)

Final Exam/(presentation of) Inquiry Research and Awareness Project – approximately 20%

In lieu of a traditional final exam, students will reflectively interact with the content and demonstrate their understanding in a written, discussion, and presentation format encapsulated in an awareness event. Students present their **Inquiry Question** in oral, powerpoint, and video format.

### Absences:

Students who miss class work must come during Flex to make up their work.

### Important information specific to this course

Students are expected to have materials specific for this course: Google account, one 3-ring binder with paper, pencils, erasers, highlighters, pencil crayons, school agenda and/or Walnut Grove app, and flash card paper.

It will be helpful for students to have access to online media (*CBC* - Canada, *CNN* - USA, *BBC* - Britain, *Spiegel* – German, *Shanghai Daily* – Chinese, *Haaretz* – Israeli, and *Aljazeera* - Arabic) on a regular basis. As well, students need to be able to use the computer and online research tools for homework and study purposes (*NoodleTools*, *Easy WhoIs*, and *Domain Tools*).

### Course connections to Graduate Profile

IDA Environmental Science has great potential for drawing upon the natural curiosity and interest that adolescents have concerning their environment and the societal issues that are part of it. Through their learning, Environmental Science students will develop a sense of understanding of their environment and compassion for others. Social responsibility is part of Langley District and WGSS' core curriculum – building leadership and compassion - for each student. Langley students are obligated to participate in volunteer service in the community; it is a requirement for graduation. IDS Environmental Science students will be actively involved in local projects that seek to solve local and global problems. Hence, the Langley Graduate Profile ties in well with the curriculum of Environmental Science: students will be diligent successful learners who aspire to integrate their understanding with their daily social life as well as commit to a high standard of achievement.

### Plagiarism

Plagiarism is derived from the Latin word *plagiarius*, that means kidnapping or abducting. Plagiarism is when someone steals someone else's written work or uses someone else's words, ideas, or thoughts and passes them off as their own. It is a moral offence and can constitute copyright infringement. Ignorance of plagiarism is not an excuse. Students caught plagiarizing will be asked to speak with the teacher and possibly the Science Department Head and the administration. Consequences will be meted out. All acts of plagiarism are recorded at WGSS in all Departments. A student may receive a score of zero ("0") on the plagiarized work, and may face suspension from school.

Students should note that at post secondary institutions (Kwantlen, UFV, UBC, UVic, TWU, SFU...), a first offence of plagiarism often results in IMMEDIATE EXPULSION.

WGSS acts proactively to prevent instances of plagiarism from occurring. At the same time, if plagiarism is committed, WGSS Departments view plagiarism as a grave offence; serious consequences will follow.

### Course Resources

Annual research and participation in collegial reading and/or marking  
Annual research and participation in the international IDS Environmental Science conservation/humanitarian trip  
BC Ministry of Education curriculum [https://curriculum.gov.bc.ca/sites/curriculum.gov.bc.ca/files/pdf/10-12/science/en\\_s\\_12\\_ens\\_elab.pdf](https://curriculum.gov.bc.ca/sites/curriculum.gov.bc.ca/files/pdf/10-12/science/en_s_12_ens_elab.pdf)  
Bryant-Taneda, Julia (website) <https://bryant-taneda.weebly.com/ids-1112-environmental-science-1819.html>  
Environmental Science and Technology <http://pubs.acs.org/journal/esthag>  
Gapminder World Statistics: <http://www.gapminder.org/>  
Journal of Environmental Sciences <https://www.journals.elsevier.com/environmental-research>  
United Nations: <http://www.un.org/en/index.html>