**First Year Seminar**

**Sustainability Group Project Assignment**

Wittenberg University is a thriving community of students, staff, and faculty who work together to realize our shared, educational mission. As members of this community, it is our responsibility to become aware of the impact of our choices and actions on those around us. This includes the resources we use on a daily basis, oftentimes without even thinking about it. How much electricity do we use playing an iPod or typing a paper on a computer? What kind of transportation are we using? How often do you eat meat and does that really matter?

As a signatory to the American College and University Presidents’ Climate Commitment, Wittenberg University has publicly recognized the importance of “providing students with the knowledge and skills needed to address the critical, systemic challenges faced by the world in this new century.” This knowledge includes questions directly related to the long-term environmental sustainability of our current practices. Every student has an environmental impact. The activity for this week will encourage you to become more aware of this impact and of options you have here on campus to decrease your environmental footprint. You will also have the opportunity to brainstorm your ideas with teammates focusing on a single resource area.

**The learning goals of this activity are:**

* You will track and present the impact of your daily choices and actions on climate change
* You will set goals for sustainable decision making at Wittenberg & beyond through your action & community action
* You will reflect on your responsibilities to make a positive difference through personal and community action

To begin, your class will be divided into 4 separate teams with each team investigating ONE of the following areas. We are using a tracking strategy developed for *The Lifestyle Project:* <http://serc.carleton.edu/introgeo/enviroprojects/lifestyle.html> (Karin Kirk & John Thomas)

Teams:

* Recycling and Waste
* Food
* Energy
* Water

Each team will receive its own set of instructions for completing this activity. It will include individual members tracking their resource use during a 48 hour period and at least one subsequent group planning session. **Take a minute now to talk to your group members to find a time and a place to meet. Exchange your contact information so that you can communicate with each other along the way. Make a plan for when you will track your personal activity in your assigned area (before your first group meeting).**

**Team # 1: Energy**

Part I. Each individual member of your team will need to record his or her energy consumption as detailed below during a 48 hour period.You will need to turn in this record the day you present.

Part II. After recording your energy consumption during 48 hours, look through the activities. Circle the activities you see as absolutely necessary, star the activities that you see as optional but fairly important, and underline the activities that were not really necessary but that you did anyway. These might guide recommendations in your presentation.

Part III. Calculate your Ecological Footprint using the following online calculator: <http://www.footprintnetwork.org/en/index.php/GFN/page/calculators/> Click on the “Explore scenarios” at the end of the quiz. What scenarios does this online calculator suggest related to energy? How can you most change your ecological footprint in the area of energy? And in other areas?

Part IV. Meet with your team and compare your circled, starred, and underlined activities. Do you agree on what’s necessary and optional? Are there any areas in which team members used zero or very little energy? What are the areas of most frequent use? Did you have similar outcomes with the online ecological footprint? Note any patterns or trends in your group.

Now brainstorm ideas for reducing your energy consumption in each area. What options do you have at Wittenberg? What are the easiest ways to reduce your energy consumption? What are the most difficult ways? Are there fun ways to reduce energy consumption? What are other schools doing to reduce energy consumption (take a look online)?

Part V. On Tuesday, April 19th, present your findings to the class summarizing the major discoveries, patterns, and ideas of your group (see Part IV). Presentation should include all members of the group and should include visual representation of your findings (for example, Powerpoint images, physical objects, posters, etc.). The presentation for your entire group should be between 7 – 10 minutes total. It should include possible solutions that will reduce the ecological footprint in the category you explored. Please review the provided rubric.

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**Energy Consumption During 48 Hours**

**A. Transportation**

For a 48 hour period, record the number of miles driven or ridden in a car. Record each trip separately. Use Google maps or a GPS device to estimate your mileage.

**Example:**

Wednesday Ferncliff Hall to HPER Center and back .6 miles

 Ferncliff Hall to downtown and back 3 miles

 with friend to movies 7 miles

Thursday to friend’s house and back 5 miles

 to Dayton and back 52 miles

 Total 67 miles

 **B. Industrial Energy Consumption**

Much of the energy used during industrial processes is reflected in the products we buy. For a 48 hour period, record everything you buy, except food.

**Example**

Wednesday two pens, a shirt

Thursday a notebook

**C. Residential Energy Use**

Hot Water- Record the amount of hot water you use in any of the following ways.

|  |  |  |
| --- | --- | --- |
|   | Day 1 | Day 2 |
| hot shower | \_\_\_\_\_\_\_\_\_ minutes  | \_\_\_\_\_\_\_\_\_ minutes |
| Sink | \_\_\_\_\_\_\_\_\_ minutes | \_\_\_\_\_\_\_\_\_ minutes |
| Laundry (hot) | \_\_\_\_\_\_\_\_\_\_\_ loads | \_\_\_\_\_\_\_\_\_\_\_ loads |
| Laundry (warm) | \_\_\_\_\_\_\_\_\_\_\_ loads | \_\_\_\_\_\_\_\_\_\_\_ loads |
| Dishwasher | \_\_\_\_\_\_\_\_\_\_\_ loads | \_\_\_\_\_\_\_\_\_\_\_ loads |
| Other |   |   |

Electricity- Record the amount of time in hours that any of the following appliances are operating.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|   | Day 1 | Day 2 |   | Day 1 | Day 2 |
| refrigerator (large) | \_\_\_\_\_\_ | \_\_\_\_\_\_ | Microwave | \_\_\_\_\_\_ | \_\_\_\_\_\_ |
| refrigerator (med) | \_\_\_\_\_\_ | \_\_\_\_\_\_ | stove top | \_\_\_\_\_\_ | \_\_\_\_\_\_ |
| refrigerator (small) | \_\_\_\_\_\_ | \_\_\_\_\_\_ | Oven | \_\_\_\_\_\_ | \_\_\_\_\_\_ |
| washing machine | \_\_\_\_\_\_ | \_\_\_\_\_\_ | Clock | \_\_\_\_\_\_ | \_\_\_\_\_\_ |
| clothes dryer | \_\_\_\_\_\_ | \_\_\_\_\_\_ | Dryer | \_\_\_\_\_\_ | \_\_\_\_\_\_ |
| incandescent lights | \_\_\_\_\_\_ | \_\_\_\_\_\_ | Iron | \_\_\_\_\_\_ | \_\_\_\_\_\_ |
| fluorescent lights | \_\_\_\_\_\_ | \_\_\_\_\_\_ | hair dryer | \_\_\_\_\_\_ | \_\_\_\_\_\_ |
| Radio | \_\_\_\_\_\_ | \_\_\_\_\_\_ | electric razor | \_\_\_\_\_\_ | \_\_\_\_\_\_ |
| Ipod/ipad | \_\_\_\_\_\_ | \_\_\_\_\_\_ | Fan | \_\_\_\_\_\_ | \_\_\_\_\_\_ |
| CD player | \_\_\_\_\_\_ | \_\_\_\_\_\_ | Humidifier | \_\_\_\_\_\_ | \_\_\_\_\_\_ |
| TV | \_\_\_\_\_\_ | \_\_\_\_\_\_ | Blender | \_\_\_\_\_\_ | \_\_\_\_\_\_ |
| DVD | \_\_\_\_\_\_ | \_\_\_\_\_\_ | Computer | \_\_\_\_\_\_ | \_\_\_\_\_\_ |
| Cell phone | \_\_\_\_\_\_ | \_\_\_\_\_\_ | other \_\_\_\_\_\_\_ | \_\_\_\_\_\_ | \_\_\_\_\_\_ |
| other \_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_ | \_\_\_\_\_\_ | other \_\_\_\_\_\_\_ | \_\_\_\_\_\_ | \_\_\_\_\_\_ |

**Team #2: Food**

Part I. For the 48 hour period, record everything you eat and drink! You will need to turn in this record the day you present.

**Example**

Wed. Breakfast bagel with cream cheese, tea

 Break Orange

 Lunch grilled cheese, salad, 2 glasses root beer, brownie

 Break Hershey bar, Snapple

 Dinner 3 slices pizza, 2 glasses juice

 Break ice cream, coffee

 Bed time glass of water

Part II. It's hard to quantify how much energy and resources go into what we eat, so we're just going to make some general observations. Generally, the less processed a food is, the less energy goes into making it; so fruits and vegetables require the lowest energy input (and waste output) per calorie. A highly processed food (twinkies, for example) requires more energy input and waste output per calorie compared to a more simple food like an apple. **The category of food with the highest environmental toll in terms of energy and water input and waste output is red meat.** For example, it takes 2,500 gallons of water to produce one pound of meat. This is because energy and water must first go into the production of grain crops, which are then fed to the livestock. Most animals are about 10 percent efficient at converting the energy from eating plants into muscle. The other 90 percent is used in the daily activities of the animal or is dissipated as heat. So this means that it takes approximately ten times the resources to produce meat as it does to produce vegetables. Dairy also requires relatively high energy and water inputs.

Other factors with food include transportation and how the food was grown (for example, whether or not it is organic). An organic apple grown nearby will have a lower energy cost than the same organic grown apple that’s shipped from the southern hemisphere. Nevertheless, compared to other variables, transportation accounts for a smaller amount of Greenhouse Gas Emissions. (For more information, see <http://pubs.acs.org/doi/pdf/10.1021/es702969f>)

And there are social variables as well. Just how much did the farmer who raised the food receive? If you don’t know the difference between fair trade and free trade, take a look!

To record your food intake, break down all the foods you ate into four categories: unprocessed (fruits, vegetables, whole grains), minimally processed (pasta, bread), highly processed (twinkies, cheese doodles), and meats. If you have any other information about the food – whether it is organic, fair trade, or grown locally, note that as well. Did you throw any food away?

Part III. Calculate your Ecological Footprint using the following online calculator: <http://www.footprintnetwork.org/en/index.php/GFN/page/calculators/> Click on the “Explore scenarios” at the end of the quiz. What scenarios does this online calculator suggest related to food? How can you most change your ecological footprint in the area of food? And in other areas?

Part IV. Meet with your team and compare your food categories. Which are the most popular categories in your group? Which are the least? Did you have similar outcomes with the online ecological footprint? Note any patterns or trends in your group.

Now brainstorm ideas for reducing your environmental impact in the area of food. What options do you have at Wittenberg? Are there other options you would like to see? What are the easiest ways to reduce your environmental impact related to food? What are the most challenging ways? Are there fun ways to reduce your environmental impact in this area?

Part V. On Tuesday, April 19th, present your findings to the class summarizing the major discoveries, patterns, and ideas of your group (see Part IV). Presentation should include all members of the group and should include visual representation of your findings (for example, Powerpoint images, physical objects, posters, etc.). The presentation for your entire group should be between 8 – 10 minutes total. It should include with possible solutions that will reduce our the ecological footprint in the category you explored. Please review the provided rubric.

**Team #3: Water**

Part I. Record your water usage in the chart below. You will need to turn in this record the day of your presentation.

|  |  |  |
| --- | --- | --- |
|   | Day 1 | Day 2 |
| shower (minutes) | \_\_\_\_\_\_ | \_\_\_\_\_\_ |
| bath (minutes the tap runs) | \_\_\_\_\_\_ | \_\_\_\_\_\_ |
| sink (minutes the tap runs) | \_\_\_\_\_\_ | \_\_\_\_\_\_ |
| toilet flushes | \_\_\_\_\_\_ | \_\_\_\_\_\_ |
| dishwasher loads | \_\_\_\_\_\_ | \_\_\_\_\_\_ |
| washing machine loads | \_\_\_\_\_\_ | \_\_\_\_\_\_ |
| other \_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_ | \_\_\_\_\_\_ |

Part II. Use the flow rates given below to find your total water usage

shower \_\_\_\_\_\_\_\_\_\_minutes x 3 gal/min. = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ gallons

bath \_\_\_\_\_\_\_\_\_\_\_\_ minutes the tap runs x 3 gal/min. = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ gallons

sink \_\_\_\_\_\_\_\_ minutes x 2 gal/min. = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ gallons

toilet flushes \_\_\_\_\_\_\_\_\_\_ x 6 gallons each flush = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ gallons

dishwasher loads\_\_\_\_\_\_\_\_\_\_ x 12 gallons/load = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ gallons

washing machine loads \_\_\_\_\_\_\_\_ x 40 gallons/load = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ gallons

other \_\_\_\_\_\_\_\_\_ gallons

TOTAL \_\_\_\_\_\_\_\_\_\_\_\_\_\_ gallons

Wait, before going any further, maybe you’re thinking….why should we be concerned about water? Sure, there are droughts in California but isn’t Ohio OK? At this point, it’s probably a good idea to remind ourselves that less than 1% of the water on the planet can be used by people (almost 97% is ocean saltwater). In addition, a lot of energy goes into producing and transporting clean water and processing waste water. And what happens to the runoff of excess water? These are all important things to consider when we’re talking about water. Now let’s take a look at the results of your own personal survey of water usage.

Which of the activities from your chart required the most water during the 48-hour period? Which required the least? Circle the activities you see as absolutely necessary, star the activities that you see as optional but fairly important, and underline the activities that were not really necessary but that you did anyway.

Part III. Calculate your Ecological Footprint using the following online calculator: <http://www.footprintnetwork.org/en/index.php/GFN/page/calculators/> Click on the “Explore scenarios” at the end of the quiz. What scenarios does this online calculator suggest related to water? How can you most change your ecological footprint in the area of water? And in other areas?

Part IV. Meet with your team and compare water use totals as well as your circled, starred, and underlined activities. Do you agree on what’s necessary and optional? Are there any areas in which team members used zero or very little water? What are the areas of most frequent use? Did you have similar outcomes with the online ecological footprint? Note any patterns or trends in your group.

Now brainstorm ideas for reducing your water consumption. What options do you have at Wittenberg? What are the easiest ways to reduce your water consumption? What are the most difficult ways? Are there fun ways to reduce water consumption?

Part V. On Tuesday, April 19th, present your findings to the class summarizing the major discoveries, patterns, and ideas of your group (see Part IV). Presentation should include all members of the group and should include visual representation of your findings (for example, Powerpoint images, physical objects, posters, etc.). The presentation for your entire group should be between 8 – 10 minutes total. It should include with possible solutions that will reduce our the ecological footprint in the category you explored. Please review the provided rubric.

**Team #4: Recycling and Waste**

Part I. Record everything you throw out or recycle in a 48 hour period. Keep the recycling in a separate category. You will need to turn in this record the day of your presentation.

**Example**

|  |  |
| --- | --- |
| Garbage | CD wrapper, plastic bag, juice box, candy bar wrapper, pizza box, envelope, paper cup with lid and straw |
| Recycling | soda bottle, 12 sheets paper, cardboard box |

Part II. After recording your recycling and waste during 48 hours, look through the items. Are there any items on the list that you did not really need in the first place? What can and can’t you recycle at Wittenberg? (If you are unsure, check here: <http://www5.wittenberg.edu/administration/green/recycling/guidelines.html>) What are your options for items that can’t be recycled through Wittenberg’s recycling program? Did you throw anything away that could have been recycled? Where are the recycling bins located in your residence hall? And in your classrooms? Take a quick peek in 2 different recycling bins and waste containers. Do you see any mixing of recycling and waste? Which bin weighs more, the recycling bin or the trash receptacle?

Part III. Calculate your Ecological Footprint using the following online calculator: <http://www.footprintnetwork.org/en/index.php/GFN/page/calculators/> Click on the “Explore scenarios” at the end of the quiz. What scenarios does this online calculator suggest related to waste? How can you most change your ecological footprint in the area of waste? And in other areas?

Part IV. Meet with your team and compare your items. Are your recycling and waste lists similar? How are they different? What did your team members observe regarding the recycling bins and trash receptacles? Did you have similar outcomes with the online ecological footprint? Note any patterns or trends in your group.

Wittenberg’s recycling rates have hovered at around 10% for the past several years (measured by weight) while many schools are well above the 50% mark. How might Wittenberg increase its recycling rates? Brainstorm with your group, do a little looking online. What have you observed regarding your own behavior and those of your friends? What are the easiest ways to reduce trash and/or increase recycling? What are the most difficult ways? Are there fun ways to reduce trash and/or increase recycling?

Part V. On Tuesday, April 19th, present your findings to the class summarizing the major discoveries, patterns, and ideas of your group (see Part IV). Presentation should include all members of the group and should include visual representation of your findings (for example, Powerpoint images, physical objects, posters, etc.). The presentation for your entire group should be between 8 – 10 minutes total. It should include with possible solutions that will reduce our the ecological footprint in the category you explored. Please review the provided rubric.