Guidelines:

1. **Two-Person Teams:** You must be on a team of only 2 people, no more, no less (if there is an odd number of people, we will work that out). You must complete both the midterm and final project with your teammate—no changing teams during the semester. Both must contribute to the projects.

2. **Team Diversity:** You are required to put the percent contribution of each person on the front page, agreed to by both team members, and the person with the highest percentage will be given the overall grade for the project, and the other person will be given the corresponding reduction in grade per the percentage. This applies to both projects. If the person on your team is not in the class, then you will be given full credit for all the work, so long as you attest that they did less than half. Hence, it is clearly to your advantage to get a person from outside the class. However, you must get any person outside the class approved by the instructor to be on your team. The only candidates from outside class that will be considered are: (i) any person from the developing world currently residing in a developing country that is not a relative or personal friend (e.g., someone you contact over the internet); (ii) any person not at OSU who is of a significantly different background from yours (e.g., race, culture, socio-economic class, native country). Everyone must get their teammate approved via a request in email to the instructor. In that email, give names of the persons on the team, and if it is someone not in the class, include a few-sentence description of their background, location, and how they are different from you. If you are not an engineer, you must get on a team with an engineer. If you are a graduate student you may not work with another graduate student in the class. *The best teammate you can pick is one that is “on the ground” up close to issues, as discussed in the book.*

3. **Citations:** You must cite all sources used to develop your reports, including written, oral, or electronic. You may include photos in your report. You may want to use google drive to collaboratively write your report.

4. **Format:** The Midterm Project report can be no longer than 10 pages long typed and the Final Project can be no longer than 20 pages long typed (1-inch margins, Times 12-point font), where the Midterm (possibly modified, e.g., after it is graded) can be part of the Final Project report, but no longer than the first half of the Final Project report of course. You may include appendices that are of any length, but these will not be graded. You will be required to submit both reports electronically. You may submit either a .pdf file or MS Word file, nothing else. If you use mathematical equations, I prefer that you use Latex and submit a .pdf.
5. **Public Solutions:** I reserve the right to post on the web solutions to Final Projects for educational purposes, and the right to discuss these solutions in this or future classes. Provide your email in your report if you want others to be able to contact you about your work.

**Grading and Solution Quality:**

1. The best projects will consider as many points from the book as possible (not all spelled out above—you figure out what all needs to be addressed), and will be as firmly connected to real problems as possible (e.g., via your teammate).
2. Grading will not be entirely “absolute” but also relative to the performance of other students in the class. You do not want to be “far below the mean.”

**Connection to Actual Humanitarian Engineering:**

The best approach to both projects is to aim them at actual humanitarian engineering you have done or will do:

1. It would not, however, be great if you based *everything* on a past project, yet a reconsideration/redesign could be fine (you judge the issue, but if you have concerns discuss them with the instructor).
2. Using the projects for a planned service project is certainly encouraged and is often the best approach.

**Midterm Project: Due Feb 21 at 3pm, submitted electronically**

It is best if you get your teammate, someone on the ground, close up to issues, to advise you at every one of the following steps to complete your project:

1. Pick a country.
2. Pick an issue (challenge, need).
3. Pick a technology solution, and justify your choice in terms of needs and priorities (e.g., via data from the UN, World Banks, US data, and World Values Survey).
4. Identify the “degree of humanitarian engineering” (qualitatively).
5. Explain in as much detail as possible the positive impact the technology will have in terms of addressing challenges or promoting social justice. Do you see negative side-effects (hint: they *always* exist)?
6. Propose a design for the technology (off-the-shelf, modified, or novel) and justify to the greatest extent possible why your design will be effective. Give technical specifications in as great of detail as possible (e.g., including circuit schematics).
7. Describe the impact of the technology on the social environment (in words and diagrams).

Format: 10 pages maximum, appendices (ungraded) allowed to any length. You are encouraged to include photos or links to videos (e.g., talking to a teammate) if you feel they are useful.
Final Project: Due April 29, 5pm, submitted electronically

1. Based on the grading of your Midterm Project, and your expanded understanding in class, improve your Midterm Project report.
2. Discuss the role of your technology in the development strategies covered in the book.
3. Apply the engineering design methodology discussed in the book to your product and include issues of sustainability, robustness, design for manufacturability, etc. (discussions/analysis of each key issue).

Format: 20 pages maximum, no more than 10 based on the Midterm Project, and appendices (ungraded) allowed to any length. You are encouraged to include photos or links to videos (e.g., talking to a teammate) if you feel they are useful.