UN 1001 Section 55  
Instructor: Rose Rao  
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Classroom: Chem Sci (19), Rm. 104A  
Time: TR from 1235-1350  
Office hours: Tues, Thurs 2-3 pm and by appointment

UN1001: Perspectives on Inquiry  
What is Appropriate Technology?

The concept of appropriate technology will be studied from a variety of disciplines such as Sociology, Economics, Political Science, Cultural Studies, and Engineering. Who decides what qualifies as appropriate technology? How does the international transfer of technology affect donor and recipient countries? Do social attitudes and norms get absorbed along with imported technologies? We will study different forms of technology such as information technology, medical technology, agricultural technology, and so on. The concepts of globalization and outsourcing will also be touched upon. The effect of the global demand for Bollywood movies will be studied to analyze how this demand has altered the kinds of movies that are being made and the effect they are having on the audiences in India and abroad.

Course requirements:

The course requires students to conduct an inquiry into a question, event or phenomenon from a variety of different disciplines, and then to let your (fact-based) findings lead you to a new and complex understanding of the question. This course will teach you how to do all that.

We cannot learn how to think critically, to respectfully consider points of view that differ from our own by completing a reading assignment or even sitting through a series of lectures. Broadening our frame of mind is a personal journey. We are all unique, and will reach this goal at different times, each in our own unique way. As a result, this class will consist of very few lectures. We will create a shared knowledge that comes out of our dialogues in class. There will be an assigned reading for each session of the class, and you are to come prepared to discuss your point of view on the material. (It is okay to disagree with the author, but you must base your argument on hard evidence from any of the disciplines.)

Your grade for the course will come out of five components: Formal Writing Project, Informal Writing, Final Presentation, Participation, and Reflection Essay. The reflection essay (described below) is an important component of the course and must be turned in to get credit for the class participation section.
Grading:
The grading for this course will be broken down to four major sections:

- 40%  Formal Writing
- 30%  Informal Writing
- 20%  Final Presentation
- 10%  Attendance and Participation

Formal Writing:
You will be doing only one 20 page formal report for this class. You will begin working on this report during the second week of the course, so you will have plenty of time to add to it, edit it, and refine it till it gets to the finished product. The quality of the finished product will depend greatly on the process that the paper has been through. It will reflect the extent to which you have incorporated suggestions for improvement that have come out of peer-reviews and my feedback on your earlier drafts. The paper should also contain a considerable amount of researched evidence to show that you have attempted to answer the question from a number of different disciplinary perspectives. The required length of the first three drafts will increase progressively as you include information from assigned readings, outside research, and personal reflection.

Informal Writing:
The grade for this will come entirely from your portfolio. It is not difficult to get the perfect score on this part of your grade. In order to do so, you will have to do the assigned readings and hand in the typed responses on time. The reading response papers are meant to help you come to an understanding of your own point of view, and they will reflect how your perspective evolves over the course of the semester when you are handed new information from a variety of sources –movies, articles, interviews, and so on. They should not be mere summaries of the information in the readings. You are required to keep all your responses in your portfolio. Your portfolio will also contain notes on class discussions and occasional in-class free-writes. I may ask to see your portfolio a couple of times during the term, and you will also be required to bring it to the conference with me at the end of the term.

Final Presentation:
You will also be required to give a final oral presentation with a visual component (poster, power-point, video of an interview..) based on your formal paper. You will be given about 10 minutes to share your paper with the class.

Attendance and Participation:
In order to get the full credit for this segment of your grade you need to keep in mind the following points:

- You are allowed two unexcused absences for the class. (You may not be absent on the day that you are to make your presentation) Any additional absences will affect your final grade.
- You must come to class prepared to participate in class discussions on assigned readings.
- You must hand in a final reflection essay.
Reflection Essay:

On the first day of class, you will begin the class with a free-write about what you hope to get out of the course. Also, you will write a short piece evaluating your ability to reason critically and analyze a question from multiple perspectives. You will revisit this journal entry during week 13 of the class and write a short commentary (in-class) on how—and if—their skills in analytical reasoning have changed. You will then use these first and last journal entries to formulate your final (2 page, typed) reflection paper regarding the course. You will be asked to address the following questions in this paper:

1) What you may have learned in this course,
2) what you may feel more capable doing now than you did at the start of the course,
3) what impact this may have outside of the particular context of this of this class.
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We live in a world that’s engulfed in-- and held together by --various forms of technology. Yet we only know it from the perspective of the role it plays in our lives. In this course will look at technology from various perspectives. It will help us to articulate what we already know about technology and identify aspects of it that we may have never considered: What role does technology play in the lives of people in other parts of the world? How is technology perceived by them? Who controls the access to technology? What is “appropriate technology” and who gets to decide what is “appropriate”? We will study the topic from various disciplines and attempt to answer these and other questions through insights gained from readings, movies, class discussions, and journal entries.
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The concept of appropriate technology will be studied from a variety of disciplines such as Sociology, Economics, Political Science, Cultural Studies, and Engineering. Who decides what qualifies as appropriate technology? How does the international transfer of technology affect donor and recipient countries? Do social attitudes and norms get absorbed along with imported technologies? We will study different forms of technology such as information technology, medical technology, agricultural technology, and so on. In addition to Appropriate Technology, we will also study technology from the context of sustainability, globalization and new technologies. Students will be exposed to extensive material which they will read in and out of class, and on which they will write critical responses. The response must be a creative analysis, and must show their accurate and thorough understanding of the assigned reading.

Appropriate Technology

We will be studying the importance of Appropriate Technology from various aspects. Although a significant proportion of the readings and class discussions will be devoted to the importance of technology appropriateness when dealing with developing countries, we will also look at it from the perspective of domestic technology issues.

Despite the fact that most of our students will be living and working in first world nations in the future, they need to be educated in the concept of technology appropriateness. Hazeltine clarifies this need by saying this:

Keeping a house warm without going into debt is not always a trivial matter, and many of us will be faced with analyzing the impact of a major technological decision in our community, such as solid waste disposal or houses filling up farmland. The issues are also important. How should technological choices be made? How will those choices affect the lives of the people involved? Many of our students, in their jobs, will be concerned about whether the so-called developing countries will survive or whether they will be so successful as to become serious competitors. Knowledge of technological change and technology transfer is helpful in this regard. While Appropriate Technology itself may not be immediate to every student, study of it is a useful way to learn about things that are immediate.

In Appropriate Technology, Hazeltine provides a good introduction to the concept of AT. He touches upon the history of AT, and also how the appropriateness of a technology can be evaluated, (given that the concept is inherently a subjective one). He also cites cases where Appropriate Technology may not be the answer and how we can instead use intermediate technologies that work in concert with existing low-level technologies in the recipient nations.
In his book *Why Globalization Works* Martin Wolf writes about the fact that imported technology (even appropriate technology) fails in the absence of appropriate governance. To illustrate this point, he describes his own firsthand experience. He worked at the World Bank for ten years. During that time he worked as senior divisional economist on India for three years, 1974-1977. In this position, his main function was (in the eyes of the Bank) to justify providing large amounts of aid to India, although the monies were being grossly mismanaged and the changes they were meant implement never got funded. Those changes did get implemented, however, almost two decades later, in 1991. These changes were made under Manmohan Singh (the then finance minister) and Montek Ahluwalia (economic secretary). This strongly validated the claim that the right form and level of governance is crucial to render a technology appropriate for the existing workforce and infrastructure. He goes on to say that this incident teaches us three things:

- Policy changes could make a huge difference to economic performance;
- Such changes can be put to effect by relatively small teams of intelligent, motivated, and well-disciplined individuals; and, most of all-
- Those changes could not be imposed from the outside.

Globalization:

Globalization is a phenomenon that has been seen as a blessing as well as a curse. However, it is actually not globalization itself that is good or bad; it is the manner that it is implemented that cause it to have good or bad effects on the parties involved.

In his book *In Defense of Globalization*, Jagdish Bhagwati talks about “appropriate governance” as a way to make globalization work better. He talks about the need to oversee an imported technology and make sure that the progress takes place at an optimal, sustainable speed rather than at the maximum possible speed. This helps the transition to the new technology be as smooth and seamless a possible.

Bhagwati also talks about the paradoxical cases of countries that have suffered “immiserizing growth”. This is a case when a country’s economy can become worse off even though it has grown in terms of accumulating wealth or improving productivity. He goes on to conclude that “a suitable policy can always nip the immiserizing growth paradox in the bud, ensuring that growth does amount to an increase in the size of the pie.” He cites the success of the green revolution in India as an example of a case when appropriate governance managed to make technology transfer a success.

New technologies:

When a new technology is introduced to a developing country, one must ensure that the technology is appropriate for the recipient country in social as well as economic terms. It is obvious that no company or organization is capable of investing enough in high-technology factories in developing countries to create sufficient employment. Thus one of the main reasons
for using Appropriate Technology is that it provides goods, services and jobs that will not be provided any other way.

In order to be appropriate, new technologies that are introduced to a developing country should be related to existing technology in that country. This ensures that the new technology will be less disruptive to the social structure, and that they will be adapted more easily. Technologies that require new infrastructure such as the building of large factories and assembly-line style of manufacturing would displace workers—often heads of households—out of villages to the big cities. Also, technologies that are too different from existing norms will be resisted by indigenous people.

Even methods of producing sophisticated equipment can be altered to suit the recipient nation’s organizational structure. Hazeltine gives us an example of “an assembly plant in Taiwan where pocket calculators are produced not in assembly lines but by small groups working in teams, just as people worked together in traditional society.” This sort of adaptable technology would naturally be accepted more readily than one that required the building of large factories, which would most likely be located far from workers’ homes.

It has also been observed that augmenting the training of traditional doctors (“herbalists”) often improves healthcare more than building western-style hospitals because people feel more comfortable using herbalists and the cost is less. This goes to prove that if a new technology is similar to an existing one, the user can adapt it more effectively to the local situation.

We will also discuss the spillover effects that the multinational corporations often have on companies in the indigenous countries.

Sustainable development:

Any program designed to meet the current and future needs of a nation’s economy must be sustainable. The economies of most developing countries are based on their environmental resources such as their soil, water, and so on. A sustainable strategy would allow us to maintain these resources even as we continued to utilize them. The basis for sustainable development is simple. In the case of agriculture, care must be taken to maintain and/or enrich the soil quality. In forestry projects, each tree felled must be met with a new one being planted. In the case of manufacturing, both material and energy must be used efficiently. Raw materials must be recycled whenever possible, and the process must ideally be powered by renewable energy resources. Also, air and water pollution must be kept to a minimum.

When we think of sustainable development we often think of natural resources but the technology must also be sustainable in another very important sense. Development will only be sustainable if it will survive after the originators have left the scene. There are many instances where the first world has transferred technology/machinery to the developing countries without training the recipient nation’s workforce on basic repairs on the machinery. In these cases, when the machine breaks down, the lack of a resident expert forces the nation to completely abandon the machinery/technology. In such cases the technology exported failed to power a sustainable development of the recipient nation’s economy.
I plan to use case studies from these and other books as well as articles from journals and magazines. Some of the case studies we will cover are:

The Union Carbide disaster in Bhopal, India

The Green Revolution and its effects in India and elsewhere

The Nestle Corporation’s export of baby formula in India

We will also see how the concept of Appropriate Technology plays out in movies like Lagaan, Gung Ho!, Wall Street, and Swades.

**Suggested Readings:**


