



## Teaching Product Development To Engineers



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*Your usage in a non-business, non-marketing course is novel. Tell us how you use the LINKS Positioning Strategy Simulation in your “ECON 205 Economics of Product Development and Markets” and what prompted you to use LINKS?*

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I used the old BRANDMAPS simulation many years ago and have used simulations including LINKS in MBA courses I have taught over the years in the Executive MBA program. I have some familiarity with simulations and what the possibilities could be.

There has been an initiative for our School of Business at Virginia Commonwealth to work more closely with our School of Engineering. When they built a new building that we moved into about two and a half years ago, the idea was to co-locate with the School of Engineering. Snead Hall, which was named after one of the contributors, has the western portion of the building, and about 40% of it is for Engineering.



**Snead Hall**

### ***What kind of a course is ECON 205?***

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To collaborate, the School of Business has been offering a course—engineering economics—which is taught by our department of economics but is for the engineering students. The engineering advisory board— comprised of local business people—wanted to see more practical components of that course. They wanted it to be more than just a text book engineering economics presentation.

I have taught product development in our marketing department in the undergraduate level for a number of years and worked on a number of projects with graduate students.

This group was getting together to talk about how the two schools could collaborate more. They said let’s integrate some product development into the course. As a result, I now teach one-third of the course, so I like to tell people “I am a marketing professor teaching product development to engineering students in an economics class.” That’s what I do.

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### *Is this a required or elective course?*

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It is required by some of the engineering majors, but not all. For EE's—Electrical Engineering majors—it is required as it is for Chemical Engineers. It is now only recommended and not required for Mechanical Engineers. Biomedical Engineers might only stumble upon it but they don't get much exposure to it. This is a 200-level class so it is taken fairly early in the program. But we do get some Juniors and Seniors taking the course with mostly Freshman and Sophomores.

### *You use LINKS near the end of the course, in a concentrated format over about three calendar weeks. Why is that?*

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I had some experience with LINKS and after being asked to teach a particular component of this course, I wanted to make it somewhat real and allow the students to participate and make decisions. I teach only one third—the last third of the course. I condense a lot of product development material in it and I teach from a marketing perspective, to understand the markets, but I also give more emphasis to technology because that is a component that the engineers are more interested in. One lecture is “where do you find information about emerging technologies?” To liven the course and give these engineering students some exposure to business, and how business decisions are made, I started to use LINKS. The specific variation of LINKS that I use is the Positioning Strategy Simulation. They usually make six decisions, and I organise the class members into firms. They have to make product-related decisions. They also have to understand markets and what markets want. They have to see how the attributes of products provide value and make their decisions on that basis.



For example, to give them exposure to product concepts and how that has to be factored into the decisions they make, I went to the conjoint analysis market research study within LINKS, and had the output on a Power point slide. I asked if any of the firms had ordered this research. Two of the eight firms had ordered it, so I talked about how to interpret it and why it might be valuable. The firms can make use of that content but also, the other firms will see that this is something they might need to do if they are going to make these kinds of decisions.

### *What are the major topics covered in ECON 205?*

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In this truncated form, I cover the product development process as an outline, and then go through the phases of product development in more detail—the discovery phase, development phase and commercialization phase which is when you launch products into the market place. When I discuss going from development to concept, I make a direct reference to LINKS and how this is something you have to do in LINKS. You have the ability to get a market research study, test concepts, and select values of attributes. I introduce LINKS early, but I also let them make mistakes which can sometimes be valuable. I encourage caution, early on, but typical students go off and make decisions without information sometimes and they take risks.

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## ***How does the LINKS Positioning Strategy Simulation fit into the course? Of all of the LINKS simulation variants, why use the LINKS Positioning Strategy Simulation?***

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Because of the limited time period we have, I didn't want to expose them to the full simulation. There are just too many components that they would have to spend time on. I am really more interested in them getting a feel of how you make product decisions. This Positioning Strategy Simulation is all about product development, and launching new products into markets and positioning and modifying configuration of the products for markets. It doesn't require a tremendous amount of time, and we don't have a tremendous amount of time, so it works very well in that respect.



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## ***What sizes are your classes?***

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This current class is 45 students but in the spring it is considerably larger, about 160 or so. We actually ran three industries of eight firms each simultaneously. Each firm had 6 or 7 in each team and there were no problems with that. Some people take the lead and do the work and try to collaborate with other people, and some sit back and don't get very involved. The teams all do a peer review, so ideally it might catch any slackers.

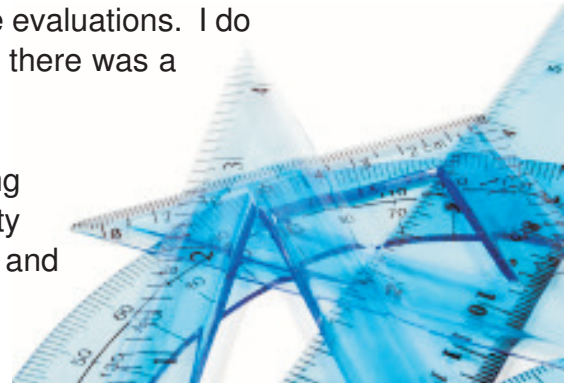
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## ***What LINKS assessment procedures do you use with your relatively large class (within-LINKS performance, written assignments, end-of-simulation presentation, questions on exams, etc.)?***

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I don't have presentations or written reports because there isn't enough time and I haven't branched into those kinds of exercises with LINKS. One of the things I like about LINKS is that it does evaluate team performance and seems like it is a very fair evaluation. 30% of the grade in the last segment of the course is based on these evaluations. I do review the peer review and adjust the grade if I feel that there was a lack of participation of an individual.

There is a bit of culture shock when you ask an engineering student to write about a business topic. It can be pretty boring. First of all they are freshmen and sophomores and secondly they are engineers.



Also, these students are not thinking a lot about competition. They know that they have to take competition into consideration. They seem to lack that competitive instinct. They focus on their firms doing well as opposed to doing so at the expense of competition and not necessarily to rub their competitors' faces in the dirt.

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## *How do the students react to LINKS?*

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I believe this may be the first time they have ever done a simulation of this type. They may have done simulations based on technology, in their engineering courses but that would be very different. They like it. Today's young people seem to like games and it is computer-based. It is right within the sphere of things they like to do.