Curriculum examples

Year four

Contents

Material and Production Technology

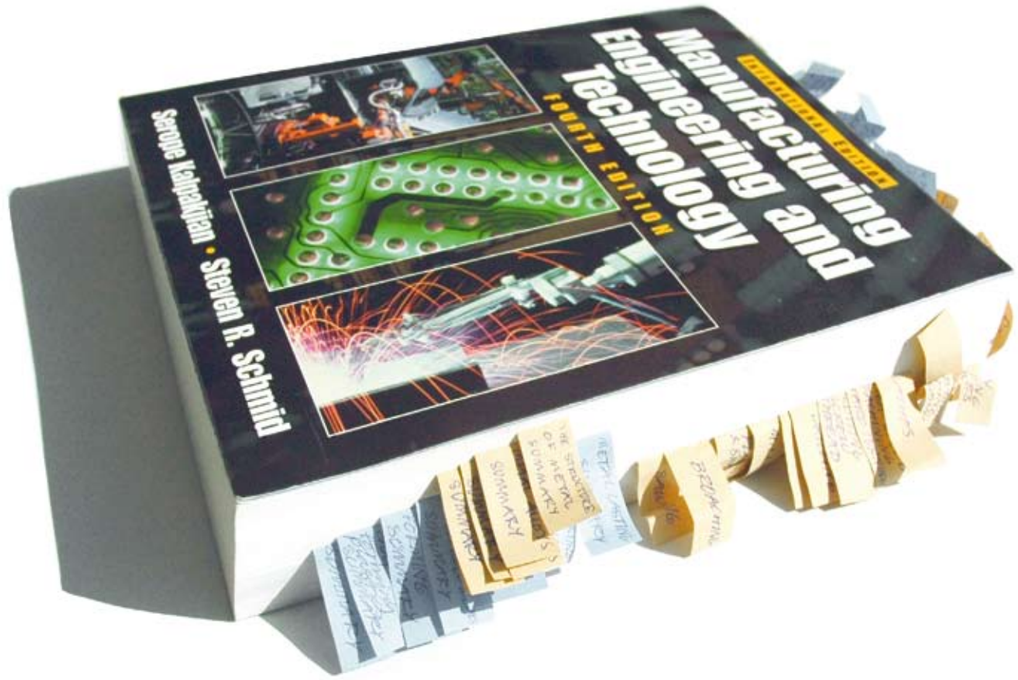
Jinming Zhou

Course description

Study of engineering materials and manufacturing processes, including interrelationships between the properties of the material and the process. The course covers the broader and fundamental aspects of engineering materials, manufacturing technologies as well as details of commonly used materials and processes including casting, bulk metal deformation, sheet metal forming, metal removal, polymers and composite processes, joining, surface treatment technologies, advanced machining technologies, and rapid prototyping.

Course objectives:

- Gain understanding and appreciation of the breadth and depth of the field of manufacturing processes.
- Recognise the strong interrelationships between material properties and manufacturing processes.
- Become familiar with the basics of casting, bulk metal deformation, sheet metal forming, polymer processes, joining processes and surface treatment technology in terms of: process principle, parameters and capabilities.
- Learn to apply basic terminology associated with these fields.




FM7

Industrial Design Project 3

Olof Kolte

“Much of the human condition results from the ways in which men divide their talents between short term, parochial problems and less urgent, but more seminal threats to the continuation of global society. Perhaps the most pernicious consequence of the rapidity of change that marks the modern era is its mobilisation of human thinking to deal almost solely with day-to-day accomodations to change, it ensures that tactics dominate strategy, that quick reaction triumphs over unhurried conception”

/Professor Paul Doty, Harvard University

The fast and huge expansion of the human enterprise with the great acceleration in the use of natural resources and energy is putting unprecedented strength on the ecosystem, the one and only life supporting system. There are very few parts of the world that have not been influenced by human activity: 50% of the earth’s surface has been altered by man. Global warming, one of the consequences, is a potential threat to all living things. Mass extinction of species at an unprecedented rate in human history is taking place. It is likely that half of all living organisms will be extinct within our lifetime.

We in “the West” have been used to, and take for granted, a “way of life”, that if it were to comprise all citizens of the planet, would by simple mathematics and physics be impossible. We would need the ecosystem, energy and natural recourses of five planets to cater for all needs.

In this project, we have been dealing with this situation, under different themes, considering the three aspects of sustainable development: economic, ecologic and social. I believe that we as designers can play an important role in transforming society into a sustainable society, without reducing the quality of life. The following are some of the projects that have been conceived in this project.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2002, Packaging Project
AFAIR

The task was to develop a packaging concept with a strong focus on the three aspects of sustainability. All aspects of the concept, from sourcing of material, through production, distribution, use and disposal affecting all stakeholders should be considered. A LCA, life cycle analysis, of the concept shall be made. Anybody without any prior information or knowledge about the concept/project/product should be able to understand it.

2003, Shop Until You Drop
A Journey Towards Sustainable Shopping

The task was to explore all aspects of the activity of shopping in a grocery store (every day products) and based on the research, create and visualise a vision for the activity of shopping in the future, with a strong focus on sustainable development.

The result of a group assignment shall be a full scale "concept store" built in the design centre. The task for the individual project is to develop a packaging concept that will relate to the groups' findings and can be used in the concept store. The starting point should be an observation of a problem or an area of interest related to packaging. All aspects, from sourcing of material through production, distribution, use and disposal by all parties involved should be considered.

1/ Sustainable Rosary 2/ Exploit, board game, you "win" by ruthlessly exploiting natural resources, including human labour 3/ Soup pills, packaged in biodegradable plastic 4/ Space saving pasta 5/ Spotted Hyena, bag "without" box, resource efficient wine distribution

6/ Space saving toilet paper 7/ Dozer's Hat, replace with cap on dishwashing liquid, squeeze the bottle to create a puddle of detergent in which to dip the brush 8/ Shopping trolley 9/ Absolut refill

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2004, Sustainable City Project

Short-sighted political and economic interests have had a great and unfortunate influence over city planning. Since the beginning of the last century, powerful economic interests in the shape of oil, tire, car-manufacturing and construction industries, retailers and their suppliers and sub-contractors have by lobbying, and sometimes unfair business methods (see Fast Food Nation) shaped what are now gloomy segregated environments, only accessible by car, that is the prevailing nature of today's cities around the globe.

The cost of this "way of life" in terms of segregation, social instability, violence, crime, is becoming obvious; nevertheless this kind of planning is the most common. The fear that densly populated countries, like India and China, would start consuming on the level of "the west" is now becoming reality with unforeseeable economic, social and environmental consequences. As an example, the sales of cars rose by eight millions in China last year, following an exponential curve.

The task

The task is to create a vision for a sustainable high-density city with great diversity and mix of activities, commercial and non-commercial, that makes it attractive to live and work in. The only means of transporting yourself and goods will be by foot, on a bicycle or on rail-bound electrified public transport. All day-to-day activities that normally would be done by car/truck/bus should be catered for by other means. Perhaps additional information technology is needed to facilitate "getting around the city". The changes on city planning level will be substantial and many other aspects of "street-life" will have to be considered.


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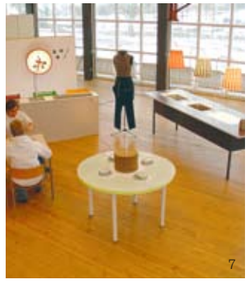
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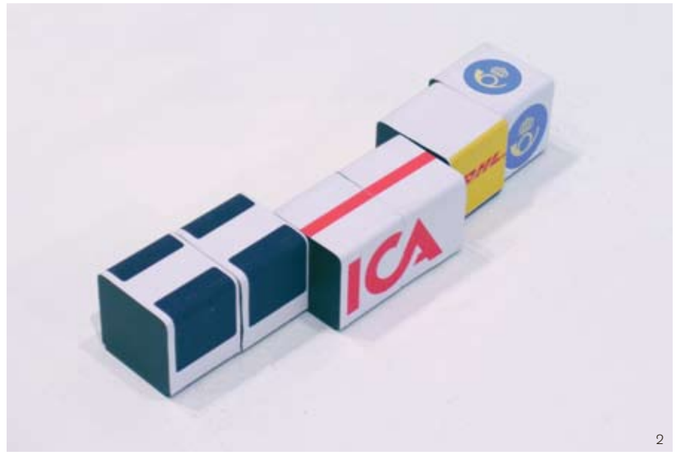
2004, School Lunch Project

This project was about improving the school lunch experience focusing on how the space could be used during the day to allow for interaction with, and involvement by the rest of society; how the atmosphere could be changed by how the food was served, involving the students in preparing and serving the food; equipping the staff with functional and stylish clothes to improve their working condition and sense of pride; involving the students in cleaning the dishes etc.

1/ A range of products to encourage cycling 2/ Traffic sign for a city based on soft mobility 3/ 4/ "Smörgåsbord": Bread holding, crumb managing and butter cooling table 5/ The school lunch project 6/ Detail of the food serving table 7/ Test in the full scale lab



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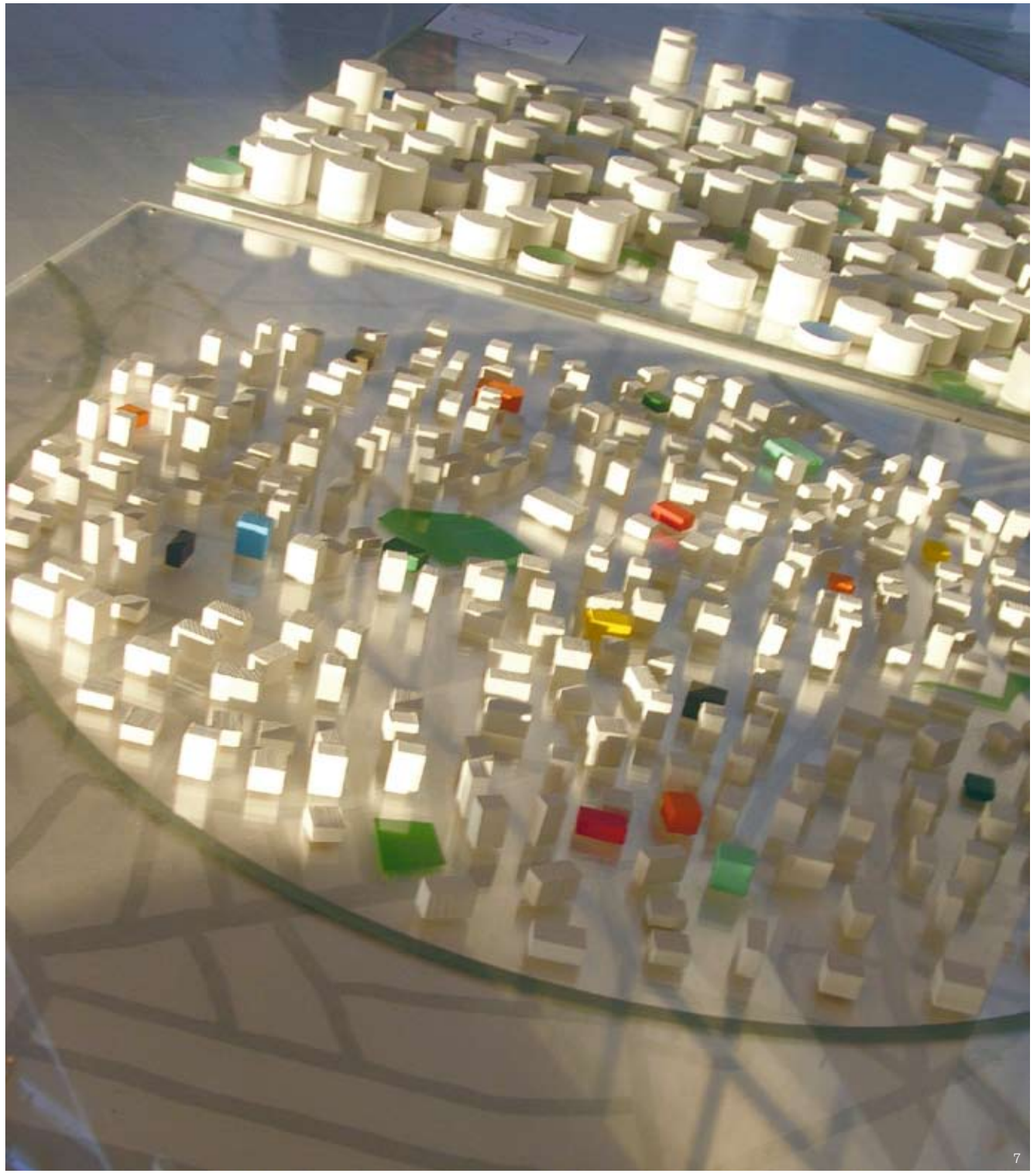

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2005, Energy Project

This project was about energy. Why do we need it? How do we produce it? How is it distributed? What do we use it for? What are the consequences? How can we use it more wisely? How can we change our way of life and use less? We, as designers can play an important part in this change by suggesting solutions that will make this change a positive experience.

Part I: The task was to create a vision for a sustainable low-energy society using 1/10th of the energy we use today. The proposal shall include studies of how energy is produced, how it is distributed and used. Principle human needs should be addressed such as shelter (buildings), food, water, mobility, media, culture, healthcare, etc. The society shall have great diversity and mix of activities, commercial and non-commercial, that makes it attractive to live and work in. All day-to-day activities should be catered for by using very little energy. The case study will be Sweden.

Part II: To develop a product/system/service that will constitute a natural part of the suggested energy system. The starting point should be an observation of a problem or an area of interest. The concept shall clearly reflect sustainable thinking. All aspects, from sourcing of material through production, distribution, use and disposal should be considered.

1/ Garden together: concept for local, small scale food production 2/ Modular electric transportation concept for cargo and travel 3/ 5/ Mc Donald's packaging concept: reusable containers for take away and eating in 4/ Cup by cup: Electric water kettle with clear cup indication encouraging you not to boil more water than needed 6/ Shower basin concept: By lathering up using the basin you only have to shower to rinse, which minimises water use 7/ Principle planning of a city based on electrified public transportation and soft mobility

Anna Persson

Internship at IDEO/San Francisco, spring 2005

In 2003, IDEO came to us to do a workshop with the fifth year students. As far as I'm concerned, it was love at first sight. Their way of working in multi-disciplinary teams and using human behaviour as inspiration for design are features that very much appeal to me. Two years later, I found myself co-running workshops with their clients as an intern at the San Francisco office.

During the five months spent there, I got a chance to work with some very inspiring people on some very diverse projects (ranging from house buying experience to baby bottle feeding systems). The internship at IDEO taught me a lot about the business but maybe even more about myself. It encouraged me to really think about what we choose to do with our lives. In general it was a healthy and valuable experience; educationally one which I found myself to be very well prepared for.

Looking back at it now, two main facts seem to stand out; I got the position and once there I felt I had a lot to offer. At the end of the day, these two facts bear testimony to the quality of education received at Lund University Industrial Design Programme – a school to which I owe many thanks.

Kajsa Westman
Internship at Volkswagen AG, Germany, spring 2006

Between March and May 2006, I did an internship at the product design department at Volkswagen AG in Wolfsburg, Germany. Wolfsburg is a small town, one hour by train from Berlin, and consists of not much more than Volkswagen; most of the city is occupied by the Volkswagen plant which is about five km across. As one of the more than 1000 trainees that pass through all the departments at the Wolfsburg plant each year, my first day was spent listening to an introduction meeting in German with 50 other trainees. The office in which I was later placed was at the far end of the big VW plant and situated on top of the modelling area, where the 1:1 clay mock-ups of new versions of VW-cars were made. To walk trough this big hall everyday and watch the clay turn into real cars was very inspiring.

The product design department develops accessories for the cars, such as sunglasses, watches, clothes and gizmos, but they also take on projects from external companies. My work consisted of researching and sketching concepts and doing renderings of possible products connected to the car in question, mostly working alone or together with my supervisor. In addition to car-related products I got the chance to do projects for companies outside VW. I was involved in the initial phase of several interesting projects, but unfortunately my internship was over before I got to see the outcome of any of them.

My three months were enough to get a glimpse of what this company does but also just barely enough to get into the work handed to me. I really appreciated this chance to do an internship at a major company like Volkswagen and the opportunity to see how a large design studio like this conducts its business.

Anton Breman

Internship at Ergonomidesign, Stockholm, 2004-2005

One of the largest and most genuine design firms in Sweden has had its nest in Stockholm since the 60s. Ergonomidesign is located by the water in an old missionary church where the one and only Emperor Haile Selassie once visited. They have now grown to a staff of thirty-six, with a mix of engineers, ergonomists, graphic designers, and, of course, industrial designers.

I was able to experience their magical mixture of theoretical and practical experience concerning human capabilities, limitations and behaviour. It was a very interesting and inspiring year that gave me a greater experience of what industrial design can be and accomplish.

While bieng there, I had the privilege to take part in projects for Ergonomidesign's main clients (Bahco and BabyBjörn) with whom I experienced how much there is to gain through a multidisciplinary design team and thorough ergonomic user studies. I also was involved in brand identity projects for Optimus which helped me to realise that design can be much more than creating shapes – by implementing design philosophy on a deeper level to create strategy for companies.

After spending one year in Stockholm I have to say that I fell in love with the city. It's the closest thing to a metropolis Sweden has to offer.

Carl Hagerling

Internship at Tom Dixon, London

During my internship at Tom Dixon my knowledge from the education was applied to real projects. I learned how to take a concept, bring it to production and onto the market.