

PRODUCT APPRECIATION AND AESTHETICS, SUBJECT STRUCTURE

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ABSTRACT

This is a new undergraduate course in the context of studies at the Industrial Engineering School of Barcelona and it is mainly dedicated to product design with the perspective on product appreciation and aesthetics. It is a necessary and complementary course to traditional engineering design that is purely technical, as it brings in art and craft-based perspectives, which in general enhances the product's attractiveness.

The teaching method used in the course is discussed: the structuring and balancing of the theoretical and practical sessions, exercises conducted, and project work carried out.

In the class time allocated to group project work, the three professors (authors of this paper) simultaneously and alternately conducted tutorial sessions with the students. This approach has been positively evaluated as adding dynamism and encouraging a rich exchange of ideas. There were also general comments on possible improvements to the course.

Keywords: Technical and aesthetics product design, Educational aspects

1 INTRODUCTION AND OBJECTIVES

A new course entitled: "Product Appreciation and Aesthetics" [1], was offered by the Engineering Design Department of the Technical University of Catalonia, in the 1st semester of 2003/04 course.

The course offers improved teaching methods as well as a necessary subject matter to complement and revitalize traditional engineering education in a Spanish university. This has been with the recognition that engineering education lacks the input of knowledge closer to the non-functional human aspects of product use and appreciation, over and above the engineering product function.

The reality is that although our engineers work in mostly technological environment, their products and services are geared for human use. It is therefore imperative that the education and training of such engineers should take into account this perspective.

The objectives of this course are:

- To explore the design principles for an improved product appreciation as an aspect of consumer delight.
- To introduce the engineering students to issues associated with product appreciation and acceptance.
- To sensitize the students to aesthetic appreciation through integrated design practice.
- To encourage teamwork and multi-skilling as a positive tool in general design practice.

The course aims at elevating the education standards to contribute a new vision to main hard-core engineering approach by introducing artisan principles on a theoretical and practical level.

It was with this thinking that the course was developed. And whilst it does not pretend to address all the answers on a better product-user relation, it contributes to the bridges of understanding that have been and continue to be built by similar and related subjects in other countries.

2 DESCRIPTION AND CONTENTS OF COURSE

This is a 30-hour optional course, and is open to a maximum of 20 students, including up to 5 from outside the school.

The course combines theoretical and practical approaches. The main subjects of syllabus are:

Theory:

- Product design characteristics.
- User perception: product semantics and semiotics
- Aesthetics.
- Art in design.
- Future trends in design.

Practice:

- User polls and questionnaires.
- Product analysis and critique.
- Product modeling.
- Design project work.

Course description:

- Characteristics of design objects.
An overview of some product development processes. Object characteristics: material, mass and content, shape and form, size and scaling, color, finishes and texture, manufacture, place and context of use.
Exercise: product feature identification, general critique of design and manufacture, highlight of characteristics that give the object its identity.
A suggestion of a product re-designs using the original components.
- User perceptions: product semantics, semiotics.
User-object interaction, factors affecting user perception, meaning and messages in products and their designs, symbolic and iconic representation, interpretation, psychological responses to objects.
Evaluation of user responses to a designed object, objective and subjective reactions.
Descriptions of emotive responses, and of the design of the object.
Exercises in deciphering meanings of particular designs, context and implication of use, etc...
- Aesthetics.
Background on the development of aesthetics, the aesthetic understanding: concepts, values, experience and attitudes.
Evaluation of desirable factors in classes of objects, culminating in defining a group of factors that would make a certain class of objects appreciable.
Formulation of "aesthetic design" principles for the said classes of objects.
- Art in design.
Definitions of art, expression, representation, art objects and products

- Artistic antecedents of design.
- Future design trends.
Open-ended discussion on the context of everyday use object, and the way that design shapes everyday life. A discussion, proposing visions on how each one sees the future of design, given the ever-changing inter-acting factors of present-day life.

3 CLASS STRUCTURE

The present day teaching format in the Barcelona School of Engineering is mainly traditional – a basic auditorium arrangement with the lecturer delivering theoretical material for most of the class time- with the occasional intervention of questions from the students.

The structure of this new course combines the above and introduces a fluid, inter-participatory dynamic with students and professors (either one-on-one or in groups).

The course is run by three professors (authors of the paper), one of whom leads the theoretical discourse of the day.

The first part of class is dedicated to theoretical base and lasts 30 - 45 min., then up to two hours of class is dedicated to group work. The classroom has movable tables and chairs and is adequate to host theoretical explanations in one table arrangement with students as audience looking at professor and the screen (to show the slides), and also in the arrangement of roundtable is adequate for integrated group work.

In this way, the course delivery uses the lecture/practical session in the approximate ratio 1:2, and synchronization between theory and practice is procured. Some of theoretical matter was distributed electronically to the students, and extensive use is also made of the internet resources on design information.

The interactive or participatory oriented teaching methods have long been proved to have improved efficiency in terms of interest generation and knowledge dissemination, and have been chosen for the new course to effectively assimilate important information in the short time-scale available.

Practical work through modeling and visualization techniques help consolidate the knowledge further, and critiques by peers of work presented moulds the self-confidence of the future designers.

As part of the main theme of the course, there are some particular individual exercises or in-group work; for example, one individual opinion poll was conducted on students about the personal reasons on choice of products, the possible wish to participate in design process before buying the product, and the reasons for appreciation of or boredom by certain products. There were also discursive exercises and opinion sharing with the groups, addressing questions such as: preferences in a new product design, related to different characteristics of products like: functionality, aesthetics or ecology.

4 THE WORK GROUPS

For project elaboration, the students were divided into multidisciplinary groups. Four groups of students each worked on one main theme. The teamwork project helps simulate above all a real working environment, and the teams are encouraged to tackle real, everyday product design problems. Since the students are drawn from different specialties, it is hoped that the multi-disciplinary interaction of the participants will enrich the idea exchange and create dynamic discussion.

The project themes are based on everyday use product, ranging from the basic design like pencil, to the highly technological like DVD player. This may be new product, new

technology, or new material application project. Specifically in this the first course, the main product themes (one for each group), were: A ski helmet (figures 1 and 2), an external part of electric switch, sunglasses and a “Discman”.

One of the strengths of the course was that the students were encouraged to select products they habitually use, and as such they would bring in informed user -based perspectives, as well as the designer’s points of view– which is necessary for good product development.

In terms of work detail, the students first analyzed the current product at hand, taking note of the materials, manufacture, assembly and finish, as well as the product function and its context of use.

From the analysis, the group identifies areas of product appreciation and use, which could be improved, and they develop a brief or project proposal based on that. They then embark on a product redesign exercise, with more emphasis on improving the aesthetics and consequent appreciation of the product at hand.

Different techniques are employed, such as product modeling, visualization, user-response questionnaires, etc., to optimize the final design.

Rigorous discussions take place throughout the product development exercise, with the tutors taking the students to task on their decisions and choices, and the groups having to defend their work based on some plausible design principle or practice.

All the three professors attend to all the groups alternatively in tutorial sessions in the classroom. In this manner, all the groups get opinions and counsel of the three professors and get variegated and complementary points of view. The professor’s interaction with students was continuous.

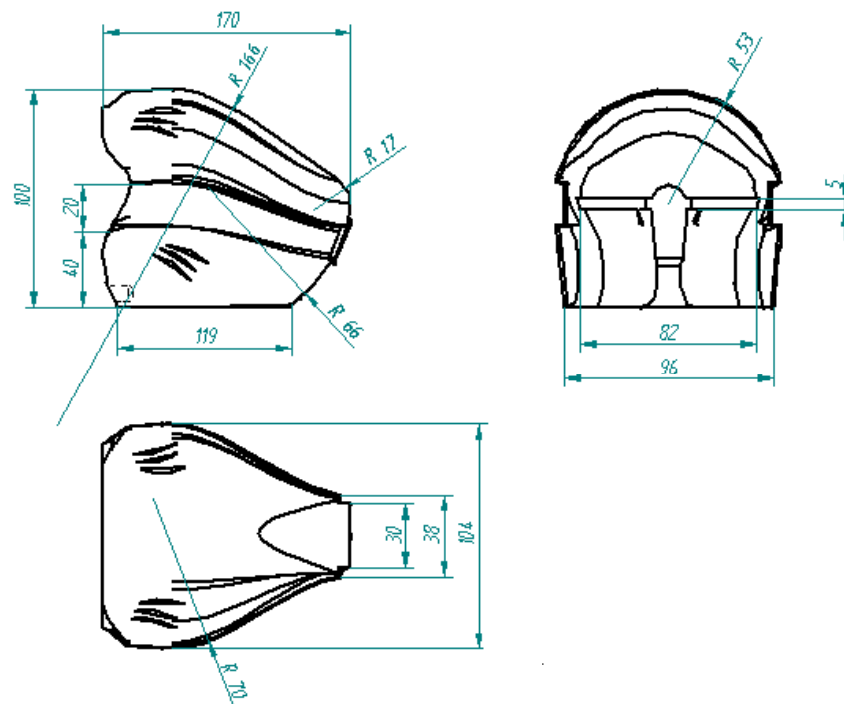


Figure 1. Dimensions of the ski helmet design.

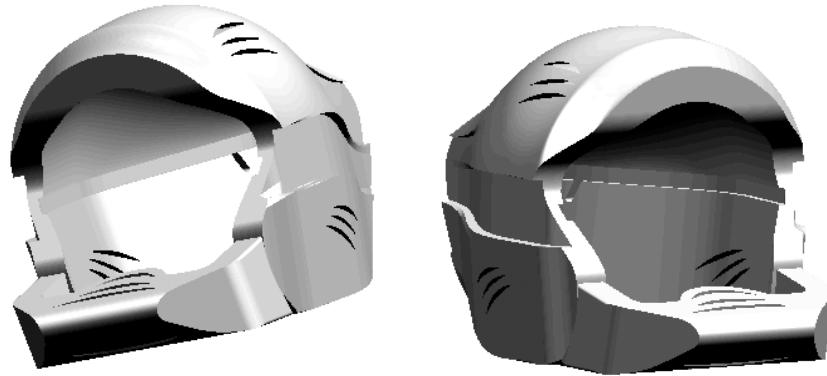


Figure 2. Computer image of ski helmet. From: D. Vidal, N. Gayarre and A. Fernández, students.

4.1 Design approach

The Engineering School in this case has a good level of technical studies, but without the essential design preparation. This course aims to contribute with the design approach that is a complementary and necessary part of engineering product design

With the goal to design an object, which “delights” [2] its future user, the product appreciation is related with the “experience” of the said product, the moment of “discovery” and the sensations associated with it. Through this, there is an interaction between the observer and the object that depends on the details designed, someone perhaps expressly concealed by designer, and on the level of curiosity or interest of the person, their background knowledge and sensitivity [3].

The practical emphasis on application of the theory, was the learning with real examples of design objects and in particular their characteristics: material, mass and content, shape and form, size and scaling, color, finishes and texture, manufacture, place and context of use, thus addressing the broad spectrum of the design parameters [4], and also combining with other techniques like using checklist [5], on some criteria for attractive product appearance. There are different ways to arrange the design elements to achieve the various effects:

- Rhythm;
- Dominance;
- Balance;
- Transition;
- Variety;
- Contrast;
- Unity;

Psychological and emotional interpretations of form and content-based on the observer’s knowledge, culture and context of inter-action.

An important aspect of this course is the application of some plastic arts techniques to stimulate creativity in design, for example: modeling 3-D visualization, etc.

For an improved appreciation, the product's context of use should be well understood and reflected in the design, so the designer will necessarily have to be sensitized to the semiotics and semantics of his or her creations. Semiotic concepts were introduced, that is the message or meaning transmitted by the object, from their form, their symbolism or their signs, and semantics or product language to relate the object and their form to something familiar, for example: metaphor, onomatopoeia, personification, irony, hyperbole, etc., are considered.

It is suggested that general considerations for a good product in this context would include: its integrity, authenticity, originality of form and primary materials, quality materials, construction and finish, and appropriateness or fitness for purpose and environment [6] in a quest to maximize its appreciation by the user.

5 EVALUATION

Continuous, regular class attendance by the student is obligatory, as part of their evaluation.

The most important for the evaluation was the final work. This final work, in relation with the theme must include:

- Objectives
- Analysis of the current product design
- Detailed design process including all the alternatives
- Final design and conclusions.
- A scale model was also required.

All group of students prepare a final work, and they collectively and individually prepare and present a visual and oral presentation. The group also elaborate their work with the scale model. After each group presentation, the students of other groups and the professors critique the work presented.

The individual grading was based on the group grades from the individual presentation and responses, by the attendance, and from the personal point of view of professors about student effort, interest, dedication, etc.

The final individual qualifications were: 2 excellent with honors, 5 very good and 11 good. Two students did not complete the course. The nature of the course and requisites for knowledge acquisition are such that a traditional sit and write examination would be inappropriate.

6 RESULTS

In this 1st edition, there was a high initial interest of students in this free elective subject and the 20 student places on offer were all taken. Two of the group projects showed very good design work and standard.

An individual anonymous student evaluation of the course was conducted at the end, addressing three questions:

- About class development.
- About subject characteristics.
- About other docent aspects.

In general, the positive review highlighted: the subject matter; the class structure with the good relation between theory and group work practice; good illustration with examples; inter-actions in discussions; the creative work and the dynamism with three professors.

Possible improvements, suggested included: practices with scale models or with 3D computer modeling, the possibility of interaction between groups of work in the middle

of course, to show more examples, to show real development of a entire design, or more information on the theme in the next classes.

The educational methodology adopted has a good performance but the class duration must increase to facilitate more detailing and elaboration in the group project work.

7 CONCLUDING REMARKS

The students' opinion poll showed generally good results on the course evaluation, with minor improvements suggested. The importance was placed mainly on the dynamism and the good information exchange in the lecture-tutorial sessions with three different lecturers.

The course content itself was something of "a walk of life". The idea of exploring why man appreciate and interact with products the way they do, and approaches by designers to enhance product aesthetics and their appreciation, was addressed by studying a person's profile in an everyday life situation, and learning about his environment like the arts, fashion, nature and all the technological environment.

It is argued that a course of this character will help produce engineers with an improved sensitivity to the user, to develop more appropriate products and services for today's consumer world. This is an essential subject matter in the Spanish engineering educational context.

REFERENCES

- [1] www.upc.es >Estudis>1er/1er i 2n cicles> Assignatures de lliure elcció> *Apreciació del Producte i Estètica*. UPC Code: 51319. (Dec. 2003).
- [2] Taylor, M., *Conference of the Chairman of Institution of Engineering Designers at 22th SEED and 7th National Conference on Product Design Education organized by the Institution of Engineering Designers (IED)*. University of Sussex, Brighton, UK. 6 - 7 September 2000.
- [3] Molokwane, S., *Los atributos estéticos para mejorar la apreciación de los objetos. Thesis project*. Technical University of Catalonia (UPC). Barcelona 2002.
- [4] Sheridan, W., *Parameters of Product Design*, Internet URL: www3.sympatico.ca/cypher2/style.htm, Oct. 2003.
- [5] D.H. Edel, Jr. *Introduction to Creative Design*, Prentice Hall, 1967.
- [6] Mc Coy, K. 1993, letter to Eye magazine (to the editor). Cited by: Poynor, R., *The beauty part, Print*, RC Publications Inc. Sep/Oct 2000, Vol. 54, Issue 5, p62, 3p.

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