UNIVERSIDAD AUTÓNOMA DE BAJA CALIFORNIA
COORDINACIÓN GENERAL DE FORMACIÓN PROFESIONAL
LEARNING MODULE

I. GENERAL INFORMATION

1. School: Facultad de Arquitectura y Diseño, Mexicali; y Facultad de Ciencias de la Ingeniería y la Tecnología, Valle de las Palmas.

2. Major: Licenciado en Diseño Industrial

3. Study Program: 2021-2

4. Learning Module Name: Usability Assessment for Industrial Designers

5. Number: 40194

6. CH: 02 **WH:** 02 **LH:** 00 **FPH:** 00 **CLH:** 00 **EH:** 02 **CR:** 06

7. Stage: Terminal

8. Module Type: Elective

9. Course Enrollment Requirements: None

Learning Module Design Team

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Approval of Assistant Dean (s)

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II. PURPOSE OF LEARNING MODULE

The learning unit will provide the student with a set of skills and tools related to Usability assessment of products/objects, which are basic for user need satisfaction and thus part of the student's graduation profile. The understanding of Usability, as part of user centered design approach, will help the student to empathize with users and therefore establish better design guidelines with a sense of innovation and sensibility. This is an elective course which takes part of the terminal stage; does not need any previous knowledge; and belongs to the knowledge area of Design.

III. COMPETENCE OF THE LEARNING MODULE

To assess the usability of products for their enhancement and as an essential part of user centered design perspective, with the aid of product evaluation protocols for specific and controlled scenarios, with innovation, sensibility and ethical awareness.

IV. EVIDENCE OF LEARNING/ACHIEVEMENT

The student will generate the following evidence to demonstrate knowledge acquisition and performance:
- Usability assessment protocol: the student will define the problem statement, product/object characteristics, user profile, the assessment objectives, the expected results and methodology.
- Usability assessment report: the student will show the data gathered, discuss the conditions of the application, analyze, and interpret said data to generate design guidelines and conclude with recommendations.

V. UNIT DESCRIPTION
UNIT I. Introduction to usability

Competency:
To define usability indicators through empirical and non-empirical methods, to understand user needs, with a critical and innovative perspective.

Content: **Time Allotted:** 10 hours

1.1. What is Usability?
    1.1.1. Ease of use: quality in use, product quality, process quality and organizational quality
    1.1.2. Usability indicators: effectiveness, efficiency, satisfaction, and pleasure
1.2. Considerations for a Usability assessment
    1.2.1. Definition: user profile and usable product/object characteristics, problem, ergonomic systems, and variables
    1.2.2. Resources: time, materials, user access, abilities, and experience
    1.2.3. Focus: user performance/satisfaction; product; development process; life cycle processes

UNIT II. Usability assessment protocol
Competency: To structure a usability assessment protocol to evaluate a product in its effectivity, efficiency and satisfactory qualities; selecting empirical and non-empirical methods considering resources, with a sensitive and ethical perspective.

Content: **Time Allotted:** 10 hours
 	
2.1. Usability metrics
    2.1.1. Qualitative data
    2.1.2. Quantitative data
    2.1.3. Quality categories
2.2. Usability methods
    2.2.1. Empirical
    2.2.2. Non-empirical
    2.2.3. Ecological validity and bias
2.3. Usability Assessment protocol structure
    2.3.1. Problem Statement: problem or necessity, research question, hypothesis, general objectives
    2.3.2. Methodology: particular objectives, sample (user profile and object/product characteristics), variables and indicators, tools, space and activities
    2.3.3. Pilot tests and filters

UNIT III. Assessment and reports

Competency:
To evaluate a selected product for its enhancement and establish design guidelines for objects, tasks and recommendations for users; applying questionnaires, and empirical and non-empirical methods, with an innovative perspective.

Content: **Time Allotted:** 12 hours

3.1. User filter and pilot test
    3.1.1. User questionnaires and follow up
    3.1.2. Pilot test, flaw detection and protocol redefinition
3.2. Usability assessment report structure
    3.2.1. Application, data gathering, discussion, analysis, interpretation, conclusions, annexes
    3.2.2. Information visualization methods
3.3. Design guidelines and recommendations
    3.3.1. Redesigning object
    3.3.2. Redesigning task
    3.3.3. Recommendations to the user

VI. STRUCTURE OF WORKSHOP PRACTICES

No.	Practice Name	Procedure	Support resources	Time
UNIT I				
1	Usability indicators, user needs and methods.	1. Follows professor guidelines and instructions. 2. Identifies usability indicators and variables considering: the problem, the ergonomic system, user profile and object/product characteristics; resources and research focus. 3. Fills out given formats. 4. Receives feedback from the professor.	● Bibliographic materials. ● Computer with internet access ● Stationery materials.	10 hours
UNIT II				
2	Usability assessment protocol.	1. Follows professor guidelines and instructions. 2. Selects usability methods evaluating their pros and cons 3. Writes the assessment protocol, considering limited resources and ethical procedures. 4. Fills out given formats. 5. Receives feedback from the professor.	● Bibliographic materials. ● Computer with internet access ● Stationery materials.	10 hours
UNIT III				
3	Usability assessment report.	1. Follows professor guidelines and instructions. 2. Selects potential participants by applying a questionnaire. 3. Applies a pilot test to a part of the selected participants to detect any possible flaws.	● Bibliographic materials. ● Computer with internet access ● Stationery materials. ● Video camera. ● Photographic camera.	12 hours

		4. Gathers evidence at all times. 5. Redefines the assessment protocol based in learned lessons from the pilot test. 6. Applies the usability assessment in a controlled environment, gathering evidence from the evaluating session. 7. Fills out given formats and report. 8. Receives feedback from the professor.		

VII. METHODOLOGY AND STRATEGIES

Course framework: The first day of class the teacher must establish the form of work, evaluation criteria, quality of academic work, rights and obligations for teacher and students.

Teaching strategies (teacher):
- Problem based learning (including a usable product/object)
- Expositions
- Debates
- Guided discussions
- Knowledge evaluations

Learning strategies (student):
- Problem research based on the characteristics of daily use of a product
- Presentations
- Debates
- Discussions
- Practical exercises and experimentation

VIII. EVALUATION CRITERIA

It is suggested to carry out the evaluation permanently during the unit development in a following way:

Accreditation criteria
- To be entitled to ordinary and extraordinary exam, the student must meet the attendance percentages established in the current School Statute.
- Scaled from 0 to 100, with a minimum approval of 60.

Assessment criteria*
- Usability indicators, user needs and methods…........ 20%
- Usability assessment protocol…............................. 40%
- Usability assessment report…………….………… 30%
- Quizzes………………………………………............… 5%
- Participation……….………………………………… 5%
- **Total**………………………………………..……....100%

*Some practices are considered as partial evaluations, such as the usability assessment protocol and report.

IX. Bibliography	
Required	**Suggested**
Bevan, N. (2001). International standards for HCI and usability. *International Journal of Human - Computer Studies*, 55(4), 533–552. Recuperado de https://doi.org/10.1006/ijhc.2001.0483 [Clásica]. Interaction Design Foundation (2020). *Interaction Design Foundation*. Recuperado de http://interaction-design.org Johnson, J. (2020). *Designing with the mind in mind: simple guide to understanding user interface design guidelines*. MA, USA: Morgan Kaufmann. https://doi.org/10.1016/C2012-0-07128-1 Jordan, P. (2003). *Designing Pleasurable Products. An Introduction to the New Human Factors*. London: Hoboken Taylor and Francis. [Clásica]. Neville, A. S., Hedge, A., Brookhuis, K., Salas, E., Hendrick, H. W. (2004). *Handbook of Human Factors and Ergonomics Methods*. USA: CRC Press. [Clásica].	Dubberly, H. (2004). *How do you design? A compendium of models*. Recuperado de http://www.dubberly.com/articles/how-do-you-design.html [Clásica]. Kolko, J. (2010). *Thoughts on interaction design*. USA: Morgan Kaufmann. [Clásica]. Kolko, J. (2014). *Well-designed: How to use empathy to create products people love*. USA: Harvard Business Press. Maguire, M., Kirakowski, J., & Vereker, N. (1998). *Respect: User centred requirements handbook*. Recuperado de: https://repository.lboro.ac.uk/articles/report/RESPECT_User_centred_requirements_handbook/9354023 [Clásica] USA Government (2021). *Home*. Recuperado de: https://www.usability.gov/index.html

X. TEACHER PROFILE
The teacher who imparts learning unit Usability Assessment for Industrial Designers must have title of Designer Industrial or related field with advanced knowledge in research and experimentation with the user and the product; analysis of tasks and usage scenarios; and in usability; preferably with postgraduate studies and two years of teaching experience and also facilitating these issues in the professional field. Must be empathetic, respectful, and proactive.