User Experience Design – 3%

Domain Scope

1. Understanding of advocacy for the user in the development of IT applications and systems
2. Development of a mind-set that recognizes the importance of users, context of use, and organizational contexts
3. Employment of user-centered methodologies in the design, development, evaluation, and deployment of IT applications and systems
4. Application of evaluation criteria, benchmarks, and standards
5. User and task analysis, human factors, ergonomics, accessibility standards, experience design, and cognitive psychology.

Domain Competencies

A. Design an interactive application, applying a user-centered design cycle and related tools and techniques (e.g., prototyping), aiming at usability and relevant user experience within a corporate environment. *(Design tools and techniques)*
B. For a case of user centered design, analyze and evaluate the context of use, stakeholder needs, state-of-the-art interaction opportunities, and envisioned solutions, considering user attitude and applying relevant tools and techniques (e.g., heuristic evaluation), aiming at universal access and inclusiveness, and showing a responsive design attitude, considering assistive technologies and culture sensitive design. *(Stakeholder needs)*
C. For evaluation of user-centered design, articulate evaluation criteria and compliance to relevant standards *(Benchmarks and standards)*
D. In design and analysis, apply knowledge from related disciplines including human information processing, anthropology and ethnography, and ergonomics/human factors. *(Integrative design)*
E. Apply experience design for a service domain related to several disciplines, focusing on multiple stakeholders and collaborating in an interdisciplinary design team. *(Application design)*

User Experience Design Subdomains

01 Perspectives and impact
(Level 1 minimal degree of engagement)
Competencies:

a. Show when human factors first became an issue in computer hardware and software design.
b. Define the meaning of human-computer interaction or HCI.
c. Define the meaning of user experience design or UXD.
d. Describe the evolution from human factors to User Experience Design (UX).
e. Contrast the physical and non-physical aspects of UXD.
f. Identify several modern high-tech computing technologies that present UXD challenges.
g. Describe several reasons for making UXD an essential part of the information technology discipline.

02 Human factors in design
(Level 2 medium degree of engagement)
Competencies:

a. Explain the conceptual terms for analyzing human interaction with products (e.g., affordance and feedback).
b. Analyze several different user populations or user cultures regarding their abilities to use software and hardware products.
c. Explain the importance of user abilities and characteristics in the usability of products.
d. Illustrate several ways cognitive and social principles apply to product design.
e. Illustrate several ways that physical aspects of product design affect usability.
f. Identify several goals, activities, and tasks related to an UX project.
g. Describe how creative innovation techniques such as brainstorming can lead to optimal user interfaces.

03 Effective interfaces
(Level 2 medium degree of engagement)
Competencies:

a. Explain how the user interface (UI) and interaction affect usability.
b. Design an interface that effectively employs localization and globalization technologies.
c. Adapt an interface to more effectively relate to users' characteristics (e.g., age, education, cultural differences).
d. Design a user experience using storyboarding techniques.
e. Design and justify a low-fidelity prototype for a system or product.
f. Design and justify a high-fidelity prototype for a system or product.
g. Demonstrate the advantages of user interface modalities other than windows, icons, menus and pointers in some situations

04 Application domain aspects
(Level 1 minimal degree of engagement)
Competencies:

a. Describe different types of interactive environments.
b. Describe several differences in developing user interfaces for different application environments and types of services.
c. Represent the connection between the design of a user interface and a model of user domain expertise.
d. Compare descriptions of cognitive models with the model names.
e. Propose cognitive models to the design of application user interfaces.
f. Argue for social psychology in the design of a user interface
g. Show how contextual, societal, cultural, and organizational factors can be applied in the design of a user interface.
h. Analyze an IT mediated service with several different user types and various stakeholders including a service provider.

05 Affective user experiences
(Level 1 minimal degree of engagement)
Competencies:

a. Illustrate how a user develops an emotional reaction to or attachment to a product, service, or system.
b. Describe how a user's emotional reaction to an interface can interfere with product or service acceptance.
c. Describe how a user's emotional reaction to a product can advance product or service acceptance.

06 Human-centered evaluations
(Level 1 minimal degree of engagement)
Competencies:

a. Demonstrate several general principles used in the heuristic evaluation of a user interface design.
b. Teach usability performance and preference metrics: learning, task time, task completion, effectiveness, and user satisfaction.
c. Describe common usability guidelines and standards.
d. Demonstrate several ways of measuring application usability employing a heuristic evaluation.
e. Produce documentation for an existing system or product with storyboarding techniques.
f. Create an appropriate usability test plan.
g. Propose several ways to measure product usability from performance and preference metrics.

07 Assistive technologies and accessibility
(Level 1 minimal degree of engagement)
Competencies:

a. Describe several main principles for universal design.
b. Illustrate the advantages and disadvantages of biometric access control.
c. Describe the symptoms of repetitive stress syndrome; list some of the approaches that can ameliorate the problem.
d. Use accessibility guidelines and standards in the design of a user interface.
e. Design a user interface to effectively use accessibility features such as an automated narrator.
f. Describe a criterion for choosing a biometric access system for a given application.
g. Propose an assistive technology computer device for persons with visual, hearing, cognitive, or motor difficulties.
h. Describe a possible interface that allows a user with severe physical disabilities to use a website.
i. Describe the structure and components of an assistive technology.

08 User advocacy
(Level 1 minimal degree of engagement)
Competencies:

a. Express the advantages and disadvantages for using a human-centered software development approach.
b. Analyze and model the user environment and context of use before designing a software application.
c. Analyze user groups and develop appropriate personas to represent them in design.
d. Propose appropriate user tasks for an application under consideration.
e. Describe the effect of socialization on the effectiveness of an application interface.
f. Demonstrate the importance of evaluating the impact of proposed system changes on the user experience.

Note: Level L1 (L1) used within a subdomain indicates a minimal degree of engagement associated with the learning proficiency of the fundamentals of the subdomain.

Levels 2 (L2) and 3 (L3) used within a subdomain indicate medium and large degrees of learning engagement associated with the application and transferring of learning to complex problems and situations.