



DUBLIN INSTITUTE OF TECHNOLOGY

**DT211C/3 BSc. (Honours) Degree in Computer
Science (Infrastructure)**

DT228/3 BSc. (Honours) Degree in Computer Science

**DT282/3 BSc. (Honours) Degree in Computer Science
(International)**

**DT8900 International Pre Masters for MSc in
Computing**

SUMMER EXAMINATIONS 2017/2018

UNIVERSAL DESIGN & ASSISTIVE TECHNOLOGY [CMPU3046]

DR. JOHN GILLIGAN

DR. DEIRDRE LILLIS

MR. ALAN FAHEY – DT211C

MR. PATRICK CLARKE – DT228/DT282

TUESDAY 8TH MAY

9.30 A.M. – 11.30 A.M.

TWO HOURS

INSTRUCTIONS TO CANDIDATES

ANSWER **QUESTION ONE** AND ANY TWO OTHERS.

QUESTION ONE CARRIES 30 MARKS, ALL OTHERS CARRY 35 MARKS.

1: Universal Design is a “process that enables and empowers a diverse population by improving human performance, health and wellness, and social participation” Steinfeld, E. and Maisel, J. (2012) Universal Design: Creating Inclusive Environments. Hoboken: Wiley.

a) Does this definition in your opinion capture the essence of Universal Design? Give two reasons to support your answer.

(8 Marks)

b) Define in your own words what is meant by Universal Design and describe two ways in which your definition is better than Steinfeld and Maisel’s definition in part a.

(10 Marks)

c) If you were asked to conduct a national audit of how well everyday household goods meet with the principles of Universal Design, how would you go about this task? Your answer should describe how you would select the sample population for survey, the criteria you would test for, the methodology with which you would measure conformance to universal design and how you would project the results from the representative sample onto the national population.

(12 Marks)

2:

a) Why do speech synthesis voices typically sound so robotic?

(5 marks)

b) Compare and contrast parametric and concatenative speech synthesis under the headings

- How they synthesize speech;
- The naturalness of the output;
- The intelligibility of the output.

(10 marks)

c) What do screen readers do? Who uses them and what are the main challenges they face when using them to access the internet?

(10 marks)

d) Describe any three difficulties the content of your computer course might present to a screen reader user.

(10 Marks)

3:

a) Describe any two possible barriers a web page can present. Your answer should consider different disabilities, including perceptual, motor and cognitive as well as different situations, such as a noisy environment, a dark place, or bright sunlight.

(7 marks)

b) What are the four key principles according to the Web Content Accessibility Guidelines 2.0 for creating accessible Web Content?

(8 Marks)

c) What is the purpose of the MeAc web accessibility project?

(5 marks)

d) Describe the main stages in conducting a Web Accessibility Audit using the MeAc methodology?

(8 marks)

e) If you were asked to design a methodology for evaluating websites for Accessibility, describe three ways in which you would improve the MeAc methodology, arguing in each case how this will benefit the process of website evaluation.

(7 marks)

4

a) What is the rationale behind the following principle of Universal Design?

(10 Marks)

Principle 3: Simple and Intuitive Use

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

Guidelines:

- 3a. Eliminate unnecessary complexity.
- 3b. Be consistent with user expectations and intuition.
- 3c. Accommodate a wide range of literacy and language skills.
- 3d. Arrange information consistent with its importance.
- 3e. Provide effective prompting and feedback during and after task completion.

b) If the above principle were applied to an online retail system – how would it influence the overall process, in your opinion?

(12 Marks)

c) How would you test an app for compliance with the above principle?

(13 Marks)