Preface

This subject unit builds and extends on the work you did in Level 1, in developing and expressing creative ideas using computers. The focus of the subject this year is on the combination of two things: signals and signal processing; and perception. The approach taken in this guide is that sound and image, and other kinds of creative outputs, are at their very basis, signals: signals from light, signals from vibration, that our senses receive and process. Perception therefore involves examining how our senses process these signals; how the eyes process light, how the ears process sound. There is also some discussion of how these processes are experienced on a higher level, which is cognitive. The subject also includes a basic look at animation. We can see this, very broadly, as looking at how human beings process information (i.e. signals). To complete the unit, there is material covering the processing of data of various kinds using computers.

At the end of this unit you will understand the basics of signal processing, and how perception works, and be able to use this to create innovative artworks.

The subject guide for **Creative Computing 2** is divided into two volumes. The first volume, which is this one, focuses on signal processing. The second volume contains material on perception, the processing of digital information and animation. It is therefore very important that you become familiar with the contents of both this volume and the second volume of the subject guide.

By the end of this unit, you should be able to implement creative concepts that are not easily realised using commercial software packages and, therefore, you will be enabled to demonstrate a high degree of originality in your own creative work.

The assessment for this unit comprises four pieces of coursework and an unseen written examination. The examination questions will be about the background, techniques and examples (including the figures presented) in Volume 1 and Volume 2 of this subject guide, and the essential reading (see below). While not required, you should read the items on the recommended reading list where possible to increase your understanding of the general subject area, and sometimes for an alternative explanation of important concepts, which you might find helpful. The items on the additional reading list provide supplementary material that you might find interesting and relevant. There is an accompanying study booklet on portfolio creation, which is not examinable. However, developing a portfolio of work will be an invaluable complement to your degree.

This subject guide is not a complete unit text on its own. It introduces topics and concepts, and provides some material to help you to study the topics in the unit. Further reading is very important as you are expected to see an area of study from an holistic point of view, and not just as a set of limited topics. Doing further reading will also help you to understand complex concepts more completely.

Essential reading

Eaton, J.W. *GNU Octave Manual*. (Bristol: Network Theory, 1996) [ISBN 0954161726].
(This is also available online in HTML form at
`http://www.gnu.org/software/octave/doc/interpreter`
and in texinfo source format in the Octave source code distribution.)

Recommended reading

Foley, J.D., A. van Dam and others *Introduction to Computer Graphics*. (Reading, Mass.; Wokingham: Addison Wesley, 1997) [ISBN 0201609215].

Howard, D.M. and J. Angus *Acoustics and Psychoacoustics*. (Oxford: Focal, 2006) [ISBN 0240519957 (pbk); 9780240519951].

Oppenheim, A.V. and A.S. Willsky with S. Hamid Nawab *Signals and Systems*. (Upper Saddle River, N.J.; London: Prentice Hall, 1997) [ISBN 0138147574].

Reas, C. and B. Fry *Processing: A Programming Handbook for Visual Designers and Artists*. (Cambridge, Mass.; London: MIT Press, 2007) [ISBN 0262182629].

Reas, C. and B. Fry `http://www.processing.org/reference`, on-line *Processing* reference manual.

Additional reading

Feynman, R.P. and others *The Feynman Lectures on Physics*. (San Francisco; Pearson/Addison Wesley, 2006) [ISBN 0905390464] Vol. 1, Chapters 35 and 36.

Handel, S. *Listening: an introduction to the perception of auditory events*. (Cambridge, Mass: MIT Press, 1989) [ISBN 0262081792] Chapters 1 to 3.