

EBU5303

Multimedia Fundamentals

Introduction

Dr. Marie-Luce Bourguet
marie-luce.bourguet@qmul.ac.uk

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Agenda

- Welcome to the multimedia programme
- What is (interactive) multimedia?
- What is this module about?
- How to study for this module

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Who am I ?

My name is Marie-Luce Bourguet

I share my time between London, Tokyo and Beijing

I speak English, French, Japanese and a tiny bit of Mandarin

I love cycling, running, swimming, travelling, and reading



I am Year 3 Academic Advisor

I am director of the Multimedia Programme

I will teach you two modules

I hope the classes will be thought provoking and interactive!

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Welcome to the Multimedia Programme !

Year 3 Sem 1

- EBU5303: Multimedia Fundamentals
- EBU6018: Advanced Transform Methods

Year 3 Sem 2

- EBU6230: Image and Video processing
- EBU6305: Interactive Media Design and Production

Year 4 Sem 1

- EBU7405: 3D Graphics Programming Tools
- EBU7240: Computer Vision

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Multimedia - what's that?

(Interactive) multimedia is the integration of digital media including combinations of electronic text, graphics, moving images, and sound, into a structured digital computerised environment that allows people to interact with the data for clear purposes.

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World Wide Web

- World Wide Web



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Digital Games

- World Wide Web
- Computer games
- Online games
- Video games



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Interactive Television

- World Wide Web
- Computer games
- Online games
- Video games
- Interactive television



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Mobile Telephony and Apps

- World Wide Web
- Computer games
- Online games
- Video games
- Interactive television
- **Mobile telephony**



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E-Commerce

- World Wide Web
- Computer games
- Online games
- Video games
- Interactive television
- Mobile telephony
- **E-Commerce**



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Electronic Literature

- World Wide Web
- Computer games
- Online games
- Video games
- Interactive television
- Mobile telephony
- E-Commerce
- **Electronic literature**



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Augmented and Virtual Reality

- World Wide Web
- Computer games
- Online games
- Video games
- Interactive television
- Mobile telephony
- E-Commerce
- Electronic literature
- **Augmented and Virtual Reality**
- Etc.



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What is this module about?

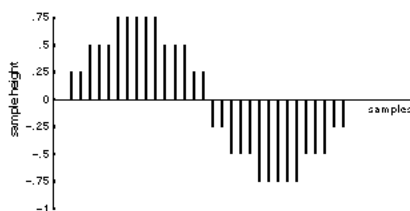
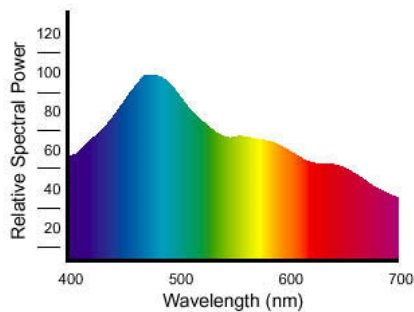
- This module is an introduction to the **representation**, **analysis** and **processing** of digital multimedia.
- It covers topics such as:
 - sampling and quantisation,
 - colour models,
 - sound, image and video representations,
 - compression and encoding, elements of psychoacoustics, elements of vision, JPEG, MPEG, MP3,
 - Elements of digital broadcasting.

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EBU5303 Week 1

- Digitisation
- Colour models
- Image representations



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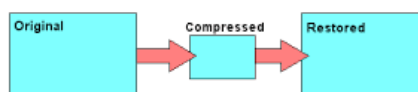


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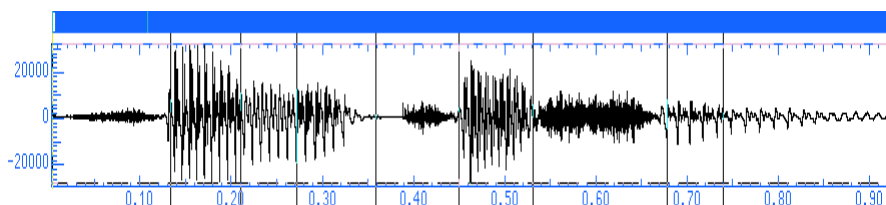
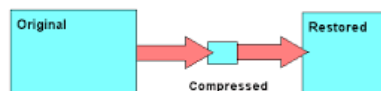
EBU5303 Week 2

- Video / Sound
- Lossless compression
- JPEG

LOSSLESS



LOSSY

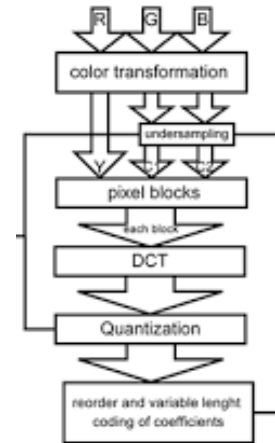
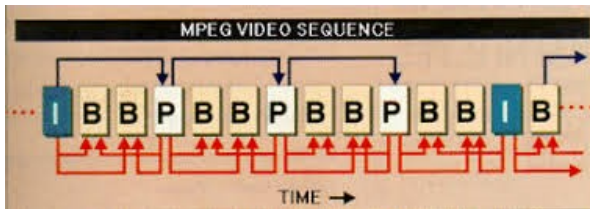


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EBU5303 Week 3

- MPEG
- Perceptual Encoding

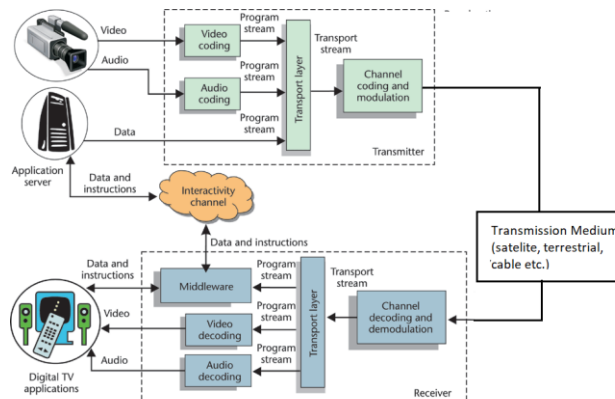


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EBU5303 Week 4

- Digital Broadcasting
- Revisions



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Blended learning

- The course is delivered through a mix of asynchronous learning (videos, quizzes, tasks, forum discussions, etc.) and synchronous (i.e. scheduled) tutorials.
- You must strictly follow the schedule given to you. Failing to follow the schedule (e.g. not watching a video or not answering a quiz on time) will result in losing marks.

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Asynchronous Learning

- Read/listen and engage with the week's material on QM+ (videos, slides, quiz, forum discussions, etc.) **before** attending tutorials.
- Read any additional recommended material to enhance your understanding of the week's topics.
- Prepare a **productive question for discussion** and post it in the course forum. Participate in ongoing discussions in the forum.
- Complete and submit group task assignments

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Sharing information and discussing about the course content

General Module Announcements

View all general news and announcements from your module lecturers.

Student forum

Students can raise questions or discuss issues related to the module by posting in this forum, which will be checked regularly by the module lecturers. Students should feel free to reply to other students if they are able to.

For all other questions (e.g. about personal matters or about your coursework marks), please email the module organiser from either of your official student email accounts (i.e. @bupt.edu.cn or @qmul.ac.uk).

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Tutorials

- The tutorials WILL NOT be a repeat of the videos content, but participatory sessions for asking/answering questions and for doing exercises.
- You MUST have studied the material on QM+ **BEFORE** attending the tutorials.
- **You must attend the tutorials that have been scheduled for your group.**

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Tutorials

- **How you engage with the asynchronous learning content and during tutorials is crucial to your success.**
- Bring a computer and/or smart phone and the week's material into the tutorials with you.
- We will do extensive use of **Mentimeter** to interact during tutorials. Please try it!

Go to: www.menti.com

Use the code: **61 79 87 0**

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Important module information on QM+

IMPORTANT MODULE INFORMATION

EBU5303 Module Descriptor (20/21)

- + **MODULE DESCRIPTION**
- + **LEARNING AIMS AND OUTCOMES**
- + **Detailed learning objectives per content topic**
- + **SCHEDULE**
- + **TEACHING ARRANGEMENTS**
- + **TUTORIALS**
- + **STUDYING FOR THIS MODULE**

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Schedule

BUP T WEE K	DATES	TOPIC	ACTIVITY/TASK
3	14 -18 SEPT.	INTRODUCTION	SELF-LEARNING: STUDY THE INTRODUCTION MATERIAL <u>BEFORE</u> THE LIVE TUTORIAL LIVE TUTORIAL (45 MINUTES): 15 SEPT (ATTEND CLASS!)
		DIGITISATION, COLOUR, IMAGES	SELF-LEARNING: STUDY THE WEEK 1 MATERIAL AND ANSWER QUIZ 1 <u>BEFORE</u> THE WEEK 1 LIVE TUTORIALS
4	21-25 SEPT.	DIGITISATION, COLOUR, IMAGES	WEEK 1 LIVE TUTORIALS (1 HOUR 30 MINUTES): 22 & 23 SEPT (ATTEND CLASSES AT THE TIME GIVEN TO YOUR GROUP!)
7	12-16 OCT.	VIDEO & AUDIO, LOSSLESS COMPRESSION, JPEG	OFFICE HOUR: 13 OCT (45 MINUTES ON MS TEAMS, OPTIONAL) SELF-LEARNING: STUDY THE WEEK 2 MATERIAL AND ANSWER QUIZ 2 <u>BEFORE</u> THE WEEK 2 LIVE TUTORIALS.
8	19-23	VIDEO & AUDIO,	WEEK 2 LIVE TUTORIALS (1 HOUR 30 MINUTES): 20 & 21

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Recommended Reading



The Science of Digital Media, by J. Burg

<http://burg.cs.wfu.edu/the-science-of-digital-media/>

Digital Multimedia, by Chapman & Chapman

Publisher: John Wiley & Sons; 3rd edition (20 Feb. 2009)

ISBN-10: 0470512164 / ISBN-13: 978-0470512166

Fundamentals of Multimedia (Texts in Computer Science),
by Ze-Nian Li, Mark S. Drew, Jiangchuan Liu

Publisher: Springer; 2nd ed. 2014 edition (23 April 2014)

ISBN-10: 3319052896 / ISBN-13: 978-3319052892

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EBU5303 Assessment

- Continuous Assessment (CW): 20% of the final mark
 - Interactive videos on QM+
 - Quizzes on QM+
 - Group assignments
 - Class Test in week 14
- Final exam: 80% of the final mark
 - Written, closed book, 2 hours, 4 questions; each question carries 25 marks roughly covering content of 1 week
- A minimum total mark of 40% is required to pass
- A minimum total CW mark of 30% is required to pass

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Interactive videos on QM+

- For each content topic, there are sets of short interactive videos.
- Interactive means that the video sometimes stops and presents you with a question or a short exercise.
- Each question/exercise carries some marks which are automatically logged in the grade book (starting from week 1).
- Multiple attempts are allowed.
- You must have watched all the videos for a given week **before** answering the week's quiz (see next slide).
- All video exercises must be completed at least one day **before** the corresponding tutorials.
- If you haven't watched the videos before the tutorial, you will not be able to claim any marks.

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Quizzes

- In addition to the videos, there is one quiz for each teaching week.
- The quiz (6 questions) covers all the topics of that week.
- Each quiz carries some marks which are automatically logged in the grade book (starting from week 1).
- You must have answered the quiz at least one day **before** the corresponding tutorials.
- The quizzes are time limited (6 minutes), only one attempt is allowed, and the questions will be different for each student.
- The quiz is for **self-assessment** and will inform the content of the tutorials (we will spend more time discussing the questions that were not well answered, if any).
- If you haven't answered the quiz before the tutorial, you will not be able to claim any marks.
- All the quiz (and video) marks you have gained during the module will be aggregated together and count towards 5% of your final total mark.

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Group Assignments

- You will work on two small group assignments
- Groups of 4 students have been setup randomly on QM+: you should start contacting the other members of your group now.
- There will be 2 group submissions in total. Only one group member needs to submit the group assignments
- The 2 submissions will together count towards 10% of your final total mark

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Feedback tutorials and Office Hour

- There will be two “feedback tutorials” of 45 minutes each (3 Nov and 1 Dec) to discuss the group assignments (attendance is mandatory).
- There will also be Office Hours of 45 minutes each, for which participation is optional (check schedule for details).

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Class Test

- It will be a 45 minutes closed book invigilated MCQ
- In BUPT week 14 (tentatively on December 2nd)
- You should revise the content of weeks 1, 2 and 3
- The result will be useful for you to know where you need more work in view of revising for the final exam
- It will be useful for me to decide the content of the revision tutorial in week 4
- It will count towards 5% of your final total mark

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Module Representatives

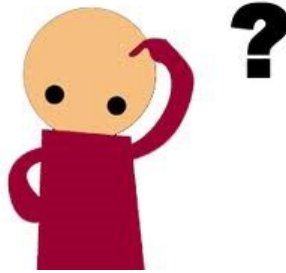
- Two “module reps” required as soon as possible (by the end of the first tutorial)
- Please volunteer!

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Do you have questions ?

Please use the discussion forum on QM+



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