Strathmore UNIVERSITY

SCHOOL OF COMPUTING & ENGINEERING SCIENCES

BACHELOR OF INFORMATICS AND COMPUTER SCIENCE

COURSE OUTLINE

ICS 3105 MULTIMEDIA APPLICATIONS

Lecturer: Dr. Victor Mageto **Email: vmageto@strathmore.edu**

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Unit Name: *Multimedia Applications*
Unit Code: **ICS 3105**
Contact hours: *45 hours*
Pre-requisite: ICS *2102 Web Development*
Purpose of the course*: To develop multimedia professionals equipped with knowledge, skills, and practical experience within the domains of technology, creativity, and enterprise.*

Course Description:			
Course-level Intended learning outcomes	**Assessment**	**Learning activities and approaches**	**Evaluation**
Upon successful completion of this course, students will be able to:	***These outcomes will be assessed by a multiplicity of the following assessments procedures:***	***Teaching Methodologies and Instructional Materials.***	***Evaluations procedures and weights***

1. Define various input/output technologies. 2. Understand storage and transmission challenges associated with multimedia. 3. Apply the multimedia concepts in applications. 4. Create animation, graphics manipulations, audio, and videos for presentations.	i) Weekly formative assessments (weekly written assignments, class exercises, quizzes) ii) Weekly learning activities (online and offline activities) iii) Work collaboratively in groups to complete assigned tasks. iv) Summative assessment (continuous assessment, lab practical, and examination)	i) Synchronous interactions (Program simulations, class and lab exercises, Lectures, Project presentations) ii) Asynchronous interactions (Discussion forum, student presentations, and interactive questions and answers) iii) Asynchronous interaction with course content.	

Evaluation	Weight	Total
Continuous assessment		20%
Semester Project		20%
Examination		60%
Total		**100%**

Unit content			
Week	**Topic**	**Intended Learning outcomes**	**Activity**
1	**Introduction to Multimedia and multimedia computing**	• Understand the background & introduction to multimedia • Be able to list the different multimedia tools and applications • Elaborate the historical perspective of multimedia • Distinguish the various challenges in multimedia systems • Be able to describe the attributes of multimedia and components of multimedia systems. • Understand the different data representations	• Class lecture • Class discussion
2	**Sound**	• Audio concepts • Sound wave characteristics • Understand the fundamentals of digital audio and digital media • Sound representation using a computer-analog, digital, ADC and DAC, sampling • Uses of audio	• Class lecture • Class discussion • This discussion has algorithmic emphasis. • Lab simulation on sound recognition based on sound processing software audacity

		• Audio formats • Hardware and software requirements for sound	• Windows | Audacity ® (audacityteam.org)
3	**Computer graphics, Images, and Color theory**	• Introduction to computer graphics • Data representations-analog, digital • Image acquisition • Image types: binary, grey, color and indexed	• Class lecture • Class discussion • Class exercise • Labs in image processing • Image editing with Adobe photoshop • Assignment
4	**Color Theory**	• Color in images • Color systems • Image formats • Image processing -techniques • Hardware and software requirements for images and graphics	• Class lecture • Class discussion • Class exercise • Labs in image processing • Image editing with Adobe photoshop
5	**Animation and project allocation**	• Video processing basics • Video and Animation Systems e.g., TV • Video formats • Be introduced to computer animation • Learn basic principles of Animation • Understand different types of animation • Illustrate different elements of animation • Hardware and software requirements for video and animation	• Class discussions • Class lecture • Lab simulation on concept drawings using blender • Project topic allocation • **CAT 1** • Download — blender.org
6	**Text**	• Introduction • Types of text • Character sets • Standardization • Cross platform issues • Hardware and software requirements for text	• Labs on text processing using notepad for HTML code • Assignment
7	**Digital multimedia and data Compression**	• Introduction • Types of redundancy • General compression Scheme • Compression Principles-coders • Techniques • Lossless and lossy compression algorithms • Image and video compression	• Class lecture • Class discussion • Class exercise

		• Text compression-types and examples e.g., Huffman coding technique	
8	**Multimedia communication networks**	• Multimedia networks. • Telephone networks. • Broadcast television networks. • Integrated Services Digital Networks (ISDN). • Broadband multiservice networks.	• Class lecture • Class discussion • Class exercise •
9	**Project progress presentation**	• Student to present the progress of their projects and provide valuable feedback and recommendation	• Project presentations
10	**Simulation and Modelling**	• Introduction • When Simulation Is and Is not the Appropriate Tool • Advantages and Disadvantages of Simulation • Areas of Application • Systems and System Environment • Components of a System • Discrete and Continuous Systems • Model of a System • Types of Models • Discrete-Event System Simulation • Steps in a Simulation Study	• Class lecture • Class discussions • Cisco Packet tracer • Cisco Skills For All
11	**Screen design with fireworks**	• Be introduced to editing different multimedia applications like photos, videos, etc.	• Class lecture • Demonstrate how to download and install software • Practical • Macromedia Fireworks 8.0 • **CAT 2** • https://archive.org/download/Fireworks8En/Fireworks8-en.exe
12	**Digital editing and aesthetics**	1. Be familiarized with and guided on the editing process of a multimedia application. 2. Directed on the best and available tools to use for digital editing **3.** Discuss the effect of different aesthetics	• Class lecture • Class discussions

13	**Project presentation and evaluation**		• Final project presentation

References

Core Reading Material for the Course

1. **Fundamentals of Multimedia** 2nd edition, by Ze-Nian Li, Mark S Drew, ISSN 1868-0941
2. **Multimedia: Making it work** 8th edition, by Tay Vaughan, McGraw Hill publication, ISBN: 978-0-07-174850-6
3. **Multimedia: Computing, Communications and Applications,** by Ralf Steinmetz, Pearson Education, 2012

Recommended Reference Material

1. Adobe Photoshop After Effects 7.0 Classroom in a Book. Adobe Creative Team. 2006. ISBN. 0321385497.
2. Macromedia Flash MX Professional 2004 Unleashed. David Vogeeler and Matthew Pizzi. 2004. ISBN 032120297X.
3. Foundations of Macromedia Flash MX. Kristian Besley, Friends of Ed.
4. Macromedia Dreamweaver MX 2004 Web Application Recipes. Joseph Lowery, Eric Ott. 2003. ISBN 0735713208
5. Multimedia: Making It Work‖ - Tay Vaughan 8th edition.
6. Multimedia Computing, Communication & Applications. Ralf Steinmetz & Klara Nahrstedt, Pearson Education

E-resources

1. http://www.entheosweb.com/fireworks/default.asp
2. http://www.adobe.com/products/photoshop/photoshop/
3. Download — blender.org
4. 3ds Max Features | 2023, 2022 Features | Autodesk
5. https://archive.org/download/Fireworks8En/Fireworks8-en.exe
6. Windows | Audacity ® (audacityteam.org)

Class Rules

1. **Punctuality** is fundamental for all classes.
2. **Plagiarism** is a serious academic offence, if detected in your assessments this will lead to striking off half the marks awarded. Plagiarism offences include but not limited to whole or partial duplication of content, failure to cite referenced work.
3. **Citation** of referenced work to be done using 6th edition APA style

4. Active participation in class discussions is encouraged and could earn marks

Communication channel(s)

1. Email: vmageto@strathmore.edu
2. Contact: +254751376963
3. Official class WhatsApp group