COURSE SYLLABUS

Course Title	**Course Code**	**Semester**	**Course Hour/Week**		**Credit**	**ECTS**
Future and Emerging Technology	VCDE224	4	**Theory** 3	**Practice** -	3	5
Course Type	Compulsory Course	Department Elective	Faculty Elective	University Elective	CoHE (YÖK) Elective	Other
	-	X	-	-	-	-
Level of Course	Associate Degree (Short Cycle)		Undergraduate (First Cycle)		Graduate/ Doctoral (Second /Third Cycle)	
	-		Yes		-	

Language of Instruction	English

Course Instructor(s)	Vic Grout	E-mail: vic.grout@arucad.edu.tr Office: TIOFF18
Course Objectives	This course is intended to introduce students to essential developments in Future and Emerging Technology and its motivation and impact. It covers selected elements of the postgraduate Futurology course at a level of discussion and analysys appropriate for second year students. One, possibly two of the case studies planned for after midterm will be decided at midterm in order to keep the material as up to date as possible. The course will identify key technology drivers, both current and future, and in both broad and specific detail, and relate these to human experience and human futures. The emphasis throughout will be on critical analysis of key technologies and different viewpoints of its development and impact.	

	Students will able to:	**Teaching Methods**	**Evaluation Methods**
Course Learning Outcomes	1. Gain a broad general knowledge of some current research areas in technology and their application in industry, commerce and further afield.	Lecture notes and reading material	Midterm exam
	2. Develop a critical awareness of the impact of current and emerging research and development.	Lecture notes and class discussion/debate	Midterm exam

Course Content	3. Identify, critically examine and debate a range of current and future technical and social issues in computing, engineering, science and wider technology.	Lecture notes and class discussion/debate	Final academic report/paper
	4. Make forecasts and judgements on the basis of, potentially conflicting, information.	Lecture notes and class discussion/debate	Final academic report/paper
	The purpose of this module is to provide students with a thorough and up-to-date knowledge of current trends in computing, engineering, science and wider technology. By definition the syllabus will be reviewed regularly but the focus for students will always be how to identify and critically analyse current issues in technology and be able to put developed arguments supporting and refuting issues, otherwise known as 'Futurism' or 'Futurology'. The syllabus will naturally be reviewed on a regular (probably twice-yearly) basis with redundant material being discarded and new introduced in its place. Typical content, based on current directions, could include: • The 'Internet of Things' • Big Data Analytics • The 'ESPELETIA' model for technological impact • Technology and the Environment/Green IT and environmental science • Optical, Quantum and Biological Computing • Parallel and Grid Computing • Artificial Intelligence and Artificial General Intelligence • Evolving High-Speed Communications • Robotics and Automation • Models of Intelligence • Privacy, Security and Threats • Health and safety • Computing in the developing world • Philosophical principles/Computational philosophy • Radio Frequency Identification (RFID) and similar technologies • The Technological Singularity (and other 'singularities') • Social Media and its Impact • The perils of 'techno-capitalism' and developing technology for profit		

COURSE OUTLINE/SCHEDULE			
Week	**Topic**	**Implementation (theory/practice)**	**Required Reading, Preliminary preparation**
1	Introduction and overview of module. What's *your* vision of the future? (Do *you* need to do anything to help/make it happen? Why futurism/futurology is *hard*!	T	Class notes. "Turing's Radiator" ('Difficult Problems in Futurism) http://vicgrout.net

2	The 'Big Technology Drivers': Working alone … and together	T	Class notes. Hoffman, S.S., The Five Forces That Change Everything: How Technology is Shaping Our Future Weinersmith, K. and Weinersmith, Z., Soonish: Ten Emerging Technologies That Will Improve and/or Ruin Everything
3	The 'ESPELETIA' model for looking at the 'bigger picture'	T	Class notes. 'A New Futurism Tool: ESPELETIA' https://vicgrout.net/2024/01/02/a-new-futurism-tool-espeletia/
4	Artificial Intelligence and Artificial General Intelligence. The 'Technological Singularity' Part 1.	T	Class notes. Hoffman, S.S., The Five Forces That Change Everything: How Technology is Shaping Our Future Weinersmith, K. and Weinersmith, Z., Soonish: Ten Emerging Technologies That Will Improve and/or Ruin Everything Grout, Vic, 'The Singularity Isn't Simple' https://www.mdpi.com/2078-2489/9/4/99
5	The 'Internet of Things' and Big Data Analytics	T	Class notes. Hoffman, S.S., The Five Forces That Change Everything: How Technology is Shaping Our Future Weinersmith, K. and Weinersmith, Z., Soonish: Ten Emerging Technologies That Will Improve and/or Ruin Everything
6	Robotics, Automation and High-Speed global communications	T	Class notes. Hoffman, S.S., The Five Forces That Change Everything: How Technology is Shaping Our Future Weinersmith, K. and Weinersmith, Z., Soonish: Ten Emerging Technologies That Will Improve and/or Ruin Everything
7	The 'Futurology Grid': Theory and practice.		Class notes. 'The Futurology Grid' https://vicgrout.net/2024/01/04/the-futurology-grid/
8	**MIDTERM**	T	**Exam (40 Points)**
9	Case Study 1: Techno-capitalism: the new future or the end of everything?	T	Class notes. 'Fully-Automated Luxury Dancing' https://vicgrout.net/2020/09/16/fully-automated-luxury-dancing-a-futuristic-conspiracy-theory/

10	Case Study 2: Models of 'Intelligence'. Is real machine intelligence possible?	T	Class notes. Grout, Vic, 'The Singularity Isn't Simple' https://www.mdpi.com/2078-2489/9/4/99
11	Case Study 3: New computing models: quantum, optical and biological computing	T	Class notes.
12	Case Study 4: Final topic to be discussed before midterm and selected in line with newest developments	T	Class notes.
13	Case Study 5: Final topic to be discussed before midterm and selected in line with newest developments	T	Class notes.
14	Student Presentations	T	Class notes
15	The 'Technological Singularity' Part 2 and the 'Environmental Singularity'. Will technology save us 'in time'?	T	Class notes. Hoffman, S.S., The Five Forces That Change Everything: How Technology is Shaping Our Future Weinersmith, K. and Weinersmith, Z., Soonish: Ten Emerging Technologies That Will Improve and/or Ruin Everything
16	Philosophy of Technology and Technology Ethics	T	Class notes. "Turing's Radiator" ('Difficult Problems in Futurism) http://vicgrout.net
17	**FINAL**		**Academic Paper Submission (60 points)**

Required Course Material(s) / Reading(s)/ Text Book(s)	Hoffman, S.S. (2021), The Five Forces That Change Everything: How Technology is Shaping Our Future, Matt Holt Books (23 Aug. 2021), ISBN: 978-1953295040. Weinersmith, K. and Weinersmith, Z. (2019), Soonish: Ten Emerging Technologies That Will Improve and/or Ruin Everything, Penguin; 1st edition (3 Oct. 2019), ISBN: 978-1846149009.

Recommended Course Material(s)/ Reading(s) /Other	• The British Computer Society (BCS), http://www.bcs.org.uk • The Institution of Engineering and Technology (IET), http://www.theiet.org • The Institute of Electrical and Electronic Engineers (IEEE), www.ieee.org • IEEE Computer and Communication Societies, http://www.computer.org and http://www.comsoc.org/ • The Association of Computing Machinery (ACM), http://www.acm.org • Media Technology websites such as the BBC, http://www.bbc.co.uk/news/technology/ • "Future Internet" (a scholarly open access journal on Internet technologies and the information society, published quarterly online by MDPI) http://www.mdpi.com/journal/futureinternet • "Turing's Radiator" ('Difficult Problems in Futurism) http://vicgrout.net • Grout Vic. (2019). *Conscious*, Amazon (Library Catalogue number: PN3433.6 G76 2019).

ASSESSMENT		
Learning Activities	**NUMBER**	**WEIGHT in %**
Mid-Term Exam	1	40
Quiz		
Assignment		
Project		
Field Study		
Presentation / Seminar		
Studio Practice		
Other		
Contribution of Final Paper to the Final Grade	1	60
TOTAL		100

	CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME LEARNING OUTCOMES						
	PROGRAMME LEARNING OUTCOMES	Level of Contribution (1- lowest/ 5- highest)					
		1	2	3	4	5	
1	Knows the historical development of the field of communication, basic concepts, theories and research methods.		X				

2	Knows the principles and elements of basic design.	X				
3	Knows the history, theories and theorists of visual communication.		X			
4	Knows advanced practical skills in various commercial and creative contexts, including graphic and audiovisual multimedia design.	X				
5	Knows national and international ethical rules, standards and legal documents on communication and visual communication design.			X		
6	Able to use the tools, methods and techniques and computer software required for visual communication design applications.	X				
7	Able to produce innovative and original works that reflect abstract and concrete concepts by emphasizing creativity	X				
8	Has the knowledge and skills to transform creative and innovative ideas into graphic, photographic, typographic, illustrative, 2 and 3-dimensional, animated and interactive visual expressions.	X				
9	Applies visual communication design techniques with design technologies in developing and changing media environments.	X				
10	Has the competence to create visuals with designs that emphasize aesthetics in design processes.	X				
11	Has the competence to define the problem, solve the problem, plan, manage the project and present in the design-based project development process.	X				
12	Has the ability to use research methods and techniques in the field of Visual Communication.				X	
13	Has the competence to research, plan, implement and report during the project phase.			X		
14	Has the competence to establish the connection between design and aesthetic values.		X			
15	Has the competence to interpret universal visual culture and associate the ties of symbols with universal visual culture.			X		
16	Has the competence to analyze, understand and interpret projects in the field of visual communication design with a critical and independent approach.			X		
17	Knows how to integrate and use digital technologies and artificial intelligence based/supported design tools creatively and innovatively in visual communication design and production stages.				X	
18	Knows how to integrate and use digital technologies and artificial intelligence-based/ supported design tools creatively and innovatively in visual communication design and production stages.				X	
19	Evaluates artificial intelligence applications in design studies with a critical approach in terms of aesthetics and originality, and uses them in accordance with ethical rules.					X

ECTS / STUDENT WORKLOAD				
ACTIVITIES	**NUMBER**	**UNIT**	**HOUR**	**TOTAL (WORKLOAD)**
Course Teaching Hour (X weeks * total course hours)	15		3	45

Preliminary Preparation and self- study	15		2	30
Mid-Term (Exam revision)	1		5	5
Quiz				
Assignment				
Project				
Field Study				
Presentation / Seminar				
Studio Practice				
Final Examination/ Final Project/ Dissertation	1		45	45
Other				
TOTAL WORKLOAD				125
TOTAL WORKLOAD / 25				5
ECTS				5

ETHICAL RULES WITH REGARD TO THE COURSE

Detected and undetected plagiarism is a serious offence at any time and it could have devastating effects on your degree result and future professional lives. However, plagiarism is easy to avoid if you make sure you identify and acknowledge your sources thoroughly and do not copy directly from visual examples, designs, or notes that have in turn been taken word for word from your sources. The maximum similarity level is 20% in written assignments.

Important Note on Attendance: You must attend at least 70% of the sessions for this course or you will automatically fail. Students cannot be absent more than 30% of the time, *even if you have medical reports* or other forms of justification. Lecturers have no control over this rule: it will be rigorously applied by the system.

You will also be required to submit a statement on your use (if any) of generative AI when submitting assignment work.

ASSESSMENT DETAILS AND EVALUATION CRITERIA:

Final Grades will be determined according to the Course Learning Activities and Final Examination/ Project/ Dissertation Assessment Details as below, and comply with the Education and Examination Regulation set forth by the University.

You will be assessed through a combination of (midterm) formal, timed exam (40%) and (final) assignment report (60%).

The (midterm) formal, timed exam (worth 40% of the overall course grade) will test basic understanding of key concepts and their application in simple scenarios. The (final) assignment report (worth 60% of the overall course grade) will allow you to consider specific combinations of technologies and project them, and their wider impact, into the future

PREPARED BY	Vic Grout
UPDATED	14/03/2025
APPROVED	