College: Engineering Department: Civil and Environmental Engineering Program: Civil Engineering **Code MUP10**

Program Tree

University Mission Keyword	College Mission drowyeKs	Program Mission sdrowyeK	Program Objectives	SLO (Code)	Courses Numbers
Developed Educational services	Educate students in engineering	Excellent engineering education	*Provide latest engineering education and state of the art research.* *Produce graduates of high quality engineering skills of ethical and professional standards.*	**a1**	CE210 – CE214 - CE240 CE370 – CE217 – CE212 CE215 – CE241 – GE306 - CE311 – CE360 – CE362 - CE371 – CE380 – CE313 CE316 – CE318 – CE320 - CE425 – CE419 – CE 421 - CE498 – CE 422 – CE424 - CE499
				a2	CE101 – CE102 – CE240 CE241 - CE 360 – GE407 - CE498- GE408 – CE424 - CE499
				a3	CE102 - CE210 – CE370 - CE217 - CE212 - CE215 CE241 - CE311 – CE360 CE362 - CE371 – CE380 - CE313 - CE316 – CE318 CE320 - CE425 – CE419 CE 421 - CE498 – GE408 CE422 – CE424 – CE499
				b1	CE101 - CE210 – CE214 - CE240 – CE370 – CE212 - CE241 - CE311 – CE360 CE362 - CE371 – CE380 - CE313 – CE320 – CE425 - CE421 – CE498 - CE422 - CE424 – CE499
				b2	CE217 – CE241 – CE311 - CE362 – CE371 – CE313 - CE318 – CE419 – CE498 - CE422 - CE423 - CE424 - CE499
				b3	CE102 - CE210 – CE214 - CE240 – CE370 – CE217 - CE212 - CE215 – CE241 - CE360 – CE362 – CE371 - CE313 – CE316 – CE318 - GE407 – CE425 – CE419 - CE421 – GE408 – CE422 - CE423 - CE424 - CE499
				c1	CE240 – CE370 – CE212 - CE241 – GE306 – CE311 - CE360 – CE362 – CE371 - CE318 – GE407 – CE498 - CE419 – GE421 – CE423 -CE424 – CE499
				c2	CE210 – CE214 – CE370 - CE217 – CE215 – GE306 - CE360 – CE362 – CE380 - CE313– CE316 – CE318 - CE320 – -

					GE407 – CE419 - CE421 – CE498 – GE408 - CE422 - CE423 - CE424 CE499
				d1	CE210 – CE214 – CE217 - CE212 – GE306 – CE311 - CE360 – CE362 – CE313 - CE316 – CE318 - CE320 - CE425 – CE419 – CE421 - GE498 – GE408 – CE422 - CE423 – CE424 – CE499
				d2	CE370 – CE217 – CE212 - CE360 – CE318 – GE407 - CE425 – CE419 – CE498 - CE425 – CE423 – CE424 - CE499
				d3	CE215 – GE306 – GE407 - CE425 – CE419 – CE421 - CE498 – GE408 – CE423 - CE499
Developed research services	Research facilities	*High quality* of knowledge, state of the art research. *Excellent* engineering education	*Produce graduates of high quality engineering skills of ethical and professional standards*	**a1**	CE210 – CE214 - CE240 CE370 – CE217 – CE212 CE215 – CE241 – GE306 - CE311 – CE360 – CE362 - CE371 – CE380 – CE313 - CE316 – CE318 – CE320 - CE425 – CE419 – CE 421 - CE498 – CE 422 – CE424 - CE499
				a2	CE101 – CE102 – CE240 CE241 - CE 360 – GE407 - CE498- GE408 – CE424 - CE499
				a3	CE102 - CE210 – CE370 - CE217 - CE212 - CE215 CE241 - CE311 – CE360 CE362 - CE371 – CE380 - CE313 - CE316 – CE318 CE320 - CE425 – CE419 CE 421 - CE498 – GE408 CE422 – CE424 – CE499
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				b2	CE217 – CE241 – CE311 - CE362 – CE371 – CE313 - CE318 – CE419 – CE498 - CE422 - CE423 - CE424 - CE499
				b3	CE102 - CE210 – CE214 - CE240 – CE370 – CE217 - CE212 - CE215 – CE241 - CE360 – CE362 – CE371 - CE313 – CE316 – CE318 - GE407 – CE425 – CE419 - CE421 – GE408 – CE422 CE423 - CE424 - CE499
				c1	CE240 – CE370 – CE212 - CE241 – GE306 – CE311 - CE360 – CE362 – CE371 - CE318 – GE407 – CE498 - CE419 – GE421 – CE423 - CE424 – CE499

				c2	CE210 – CE214 – CE370 - CE217 – CE215 – GE306 - CE360 – CE362 – CE380 - CE313– CE316 – CE318 - CE320 – GE407 – CE419 - CE421 – CE498 – GE408 - CE422 - CE423 - CE424 CE499
				d1	CE210 – CE214 – CE217 - CE212 – GE306 – CE311 -CE360 – CE362 – CE313 - CE316 – CE318 - CE320 - CE425 – CE419 – CE421 - GE498 – GE408 – CE422 - CE423 – CE424 – CE499
				d2	CE370 – CE217 – CE212 - CE360 – CE318 – GE407 - CE425 – CE419 – CE498 - CE425 – CE423 – CE424 - CE499
				d3	CE215 – GE306 – GE407 - CE425 – CE419 – CE421 - CE498 – GE408 – CE423 - CE499
Academic competition	Provide high quality Engineering knowledge	*Talented* and creative engineers. *High quality* of knowledge, state of the art research.	*Produce graduates of high quality engineering skills of ethical and professional standard.* *To educate students to take leadership roles in identifying emerging issues.*	**a1**	CE210 – CE214 - CE240 CE370 – CE217 – CE212 CE215 – CE241 – GE306 - CE311 – CE360 – CE362 - CE371 – CE380 – CE313 - CE316 – CE318 – CE320 - CE425 – CE419 – CE 421 - CE498 – CE 422 – CE424 - CE499
				a2	CE101 – CE102 – CE240 CE241 - CE 360 – GE407 - CE498-GE408 – CE424 - CE499
				a3	CE102 - CE210 – CE370 - CE217 - CE212 - CE215 CE241 - CE311 – CE360 CE362 - CE371 – CE380 - CE313 - CE316 – CE318 CE320 - CE425 – CE419 CE 421 - CE498 – GE408 CE422 – CE424 – CE499
				b1	CE101 - CE210 – CE214 - CE240 – CE370 – CE212 - CE241 - CE311 – CE360 CE362 - CE371 – CE380 - CE313 – CE320 – CE425 - CE421 – CE498 - CE422 - CE424 – CE499
				b2	CE217 – CE241 – CE311 - CE362 – CE371 – CE313 - CE318 – CE419 – CE498 - CE422 - CE423 - CE424 - CE499
				b3	CE102 - CE210 – CE214 - CE240 – CE370 – CE217 - CE212 - CE215 – CE241 - CE360 – CE362 – CE371 - CE313 – CE316 – CE318 - GE407 – CE425 – CE419 - CE421 – GE408 – CE422 - CE423 - CE424 - CE499
				c1	CE240 – CE370 – CE212 - CE241 – GE306 – CE311 - CE360 – CE362 – CE371 - CE318 – GE407 – CE498 - CE419 –

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				c2	CE210 – CE214 – CE370 -CE217 – CE215 – GE306 - CE360 – CE362 – CE380 - CE313 – CE316 – CE318 - CE320 – GE407 – CE419 - CE421 – CE498 – GE408 - CE422 - CE423 - CE424 CE499
				d1	CE210 – CE214 – CE217 - CE212 – GE306 – CE311 - CE360 – CE362 – CE313 - CE316 – CE318 - CE320 - CE425 – CE419 – CE421 - GE498 – GE408 – CE422 - CE423 – CE424 – CE499
				d2	CE370 – CE217 – CE212 - CE360 – CE318 – GE407 - CE425 – CE419 – CE498 - CE425 – CE423 – CE424 - CE499
				d3	CE215 – GE306 – GE407 - CE425 – CE419 – CE421 - CE498 – GE408 – CE423 - CE499
Ethical Responsibilities		Professional and ethical responsibilities	*To educate students to take leadership roles in identifying emerging issue. Produce graduates of high quality engineering skills of ethical and professional standard.*	**a1**	CE210 – CE214 - CE240 CE370 – CE217 – CE212 CE215 – CE241 – GE306 - CE311 – CE360 – CE362 - CE371 – CE380 – CE313 - CE316 – CE318 – CE320 - CE425 – CE419 – CE 421 - CE498 – CE 422 – CE424 - CE499
				a2	CE101 – CE102 – CE240 CE241 - CE 360 – GE407 - CE498- GE408 – CE424 - CE499
				a3	CE102 - CE210 – CE370 - CE217 - CE212 - CE215 CE241 - CE311 – CE360 CE362 - CE371 – CE380 - CE313 - CE316 – CE318 CE320 - CE425 – CE419 CE 421 - CE498 – GE408 CE422 – CE424 – CE499
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				b2	CE217 – CE241 – CE311 - CE362 – CE371 – CE313 - CE318 – CE419 – CE498 - CE422 - CE423 - CE424 - CE499
				b3	CE102 - CE210 – CE214 - CE240 – CE370 – CE217 - CE212 - CE215 – CE241 - CE360 – CE362 – CE371 - CE313 – E408 – CE422 - CE423 - CE424 - CE499
				c1	CE240 – CE370 – CE212 - CE241 – GE306 – CE311 - CE360

					– CE362 – CE371 - CE318 – GE407 – CE498 - CE419 – GE421 – CE423 - CE424 – CE499
				c2	CE210 – CE214 – CE370 - CE217 – CE215 – GE306 - CE360 – CE362 – CE380 - CE313– CE316 – CE318 - CE320 – GE407 – CE419 -CE421 – CE498 – GE408 - CE422 - CE423 - CE424 - CE499
				d1	CE210 – CE214 – CE217 - CE212 – GE306 – CE311 - CE360 – CE362 – CE313 - CE316 – CE318 - CE320 - CE425 – CE419 – CE421 - GE498 – GE408 – CE422 - CE423 – CE424 – CE499
				d2	CE370 – CE217 – CE212 - CE360 – CE318 – GE407 - CE425 – CE419 – CE498 - CE425 – CE423 – CE424- CE499
				d3	CE215 – GE306 – GE407 - CE425 – CE419 – CE421 - CE498 – GE408 – CE423 - CE499
Society partnership	Research for the benefit of society	Serve the community	*Demonstrate Engineering leadership skills.* *Encourage graduates in private and public activities.*	**a1**	CE210 – CE214 - CE240 CE370 – CE217 – CE212 CE215 – CE241 – GE306 - CE311 – CE360 – CE362 - CE371 CE380 – CE313 - CE316 – CE318 – CE320 - CE425 – CE419 – CE 421 - CE498 – CE 422 – CE424 - CE499
				a2	CE101 – CE102 – CE240 CE241 - CE 360 – GE407 - CE498- GE408 – CE424 - CE49
				a3	CE102 - CE210 – CE370 - CE217 - CE212 - CE215 - CE241 - CE311 – CE360 CE362 - CE371 – CE380 - CE313 - CE316 – CE318 CE320 - CE425 – CE419- CE 421 - CE498 – GE408 - CE422 – CE424 – CE499
				b1	CE101 - CE210 – CE214 - CE240 – CE370 – CE212 CE241 - CE311 – CE360 CE362 - CE371 – CE380 - CE313 – CE320 – CE425 - CE421 – CE498 - CE422 - CE424 – CE499
				b2	CE217 – CE241 – CE311 - CE362 – CE371 – CE313 - CE318 – CE419 – CE498 - CE422 - CE423 - CE424 - CE499
				b3	CE102 - CE210 – CE214 - CE240 – CE370 – CE217 - CE212 - CE215 – CE241 - CE360 – CE362 – CE371 - CE313 – CE316 – CE318 - GE407 – CE425 – CE419 - CE421 – GE408 – CE422 - CE423 - CE424 - CE499

				c1	CE240 – CE370 – CE212- CE241 – GE306 – CE311 CE360 – CE362 – CE371 - CE318 – GE407 – CE498 CE419 – GE421 – CE423 - CE424 – CE499
				c2	CE210 – CE214 – CE370 - CE217 – CE215 – GE306 CE360 – CE362 – CE380 - CE313– CE316 – CE318 CE320 – GE407 – CE419 - CE421 – CE498 – GE408 CE422 - CE423 - CE424 - CE499
				d1	CE210 – CE214 – CE217 - CE212 – GE306 – CE311- CE360 – CE362 – CE313 - CE316 – CE318 - CE320 - CE425 – CE419 – CE421 - GE498 – GE408 – CE422 CE423 – CE424 – CE499
				d2	CE370 – CE217 – CE212 - CE360 – CE318 – GE407 - CE425 – CE419 – CE498 - CE425 – CE423 – CE424 - CE499
				d3	CE215 – GE306 – GE407 - CE425 – CE419 – CE421 - CE498 – GE408 – CE423 - CE499

(1) **University Mission**: Majmaah University provides educational and research services via an academic system that is capable of competing with an eye on the market demands and the society partnership.

(2) **College of Engineering Mission**: To provide and educate students with the highest quality in engineering knowledge and to facilitate cutting edge research for the benefit of the society.

(3) **Civil Engineering Program:** To provide excellent engineering education conducive to talent and creativity based on scientific knowledge, state of the art research and expertise to serve the community in a professional and ethical manner.

N	*CE Program Objectives*
1	To provide latest engineering education and state of the art research to solve important civil engineering problems and address technological challenges of the future.
2	To produce graduates to demonstrate commitment to lifelong learning and professional development through seeking professional licensure, pursuing higher studies, and participating in certified continuing education activities.
3	To produce graduates of high quality engineering skills of ethical and professional standards to develop safe, efficient and environment friendly civil engineering projects and designs.
4	To educate students to take leadership roles in identifying emerging issues of the community and to develop innovative solutions to the engineering challenges.
5	Encourage graduates in private and public activities to achieve consolidated progression in their careers by participating in skilled continuing education activities.

CE KPI's

***Outcome (a)*: an ability to apply Knowledge of mathematics, science and engineering**
KPI (1): Apply mathematical and scientific principles to formulate models and systems relevant to civil engineering
KPI (2): solve computer engineering problems by using the concepts of integral and differential calculus and/or linear algebra
KPI (3): appropriate engineering interpretation of mathematical and scientific terms
KPI (4):Translates academic theory into engineering applications
KPI (5): Executes calculations correctly
KPI (6): Analyzing data using statistical concepts

***outcome (b)*: An ability to design and conduct experiments, analyze and interpret data**
KPI (7): laboratory safety procedures
KPI (8): experimental plan of data gathering
KPI (9): Data documentation
KPI (10): Development and implementation of logical experimental procedures
KPI (11): Selection of appropriate equipment and instruments to perform the experiment
KPI (12): Operation of instrumentation and process equipment
KPI (13): The analysis and interpretations of data using appropriate theory
KPI (14): Awareness of measurement errors
KPI (15): Seeking information for the experiment

Outcome (c): An ability to design a system, component or process to meet desired needs within realistic constraints
KPI (16): Developing a design strategy
KPI (17): Use of approaches
KPI (18): Developing solutions
KPI (19): Understanding how areas interrelate and demonstrates ability to integrate prior knowledge into a new problem
KPI (20): Using computer engineering tools
KPI (21): Supporting design procedure with documentation and references
KPI (22): Developing a solution that includes realistic constraints
KPI (23): Appling engineering and/or scientific principles correctly to design practical processes
KPI (24): Recognizing practical significance of design outcome/answer
KPI (25): Thinking holistically

Outcome (d): The ability to function on multidisciplinary teams
KPI (26): Presentation and workload contribution
KPI (27): Preparation for group meetings
KPI (28): Cooperation
KPI (29): Sharing credit of success
KPI (30): Sharing information and providing Assistant
KPI (31): Role in a group
KPI (32): Encouraging participation among all team members
KPI (33): Conflict Resolution
KPI (34): Courteous group member
KPI (35): Knowledge of technical skills, to disciplines outside of civil engineering

Outcome (e): **An ability to identify, formulate, and solve engineering problems**
KPI (36): Solutions creativity alternatives
KPI (37): practical problem solving using theoretical concepts
KPI (38): predict and defend problem outcomes
KPI (39): The uses of appropriate resources needed to solve problems
KPI (40): The integration of new information with previous knowledge
KPI (41): The understanding of how various pieces of the problem relate to each other and the whole
KPI (42): Strategies for solving problems
KPI (43): Correction of the answer
KPI (44): Solutions: other ways

Outcome (f): **An understanding of professional and ethical responsibility**
KPI (45): Civil Engineering code of Ethics understanding
KPI (46): In class discussions and exercises on ethics and professionalism
KPI (47): Ethical behavior among peers and faculty
KPI (48): Personal responsibility for his/her actions
KPI (49): Punctual, professional, and collegial
KPI (50): The use of facts and a professional code of ethics to Evaluate a situation in practice or as a case study
KPI (51): The use of personal value system to support actions, and the understanding of the role of professional ethical standards for corporate

Outcome (g): **An ability to communicate effectively (written)**
KPI (52): Articulation of ideas
KPI (53): The organization of the written materials
KPI (54): The Use of graphs, tables, and diagrams
KPI (55): The presentation of the written work
KPI (56): Grammar and spelling
KPI (57): Figures format
KPI (58): Writing style
KPI (59): Prescribed format (if any)

Outcome (g'): **An ability to communicate effectively (oral)**
KPI (60): Oral presentation delivery
KPI (61): Presentation details and appropriate technical content for the time constraint and the audience
KPI (62): Presentation mechanical aspects
KPI (63): English language
KPI (64): Visual aides
KPI (65): Appearance
KPI (66): Questions

Outcome (h): **the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context**
KPI (67): Awareness of current trends and events
KPI (68): Historical aspects of engineering solutions
KPI (69): Technical periodicals
KPI (70): Personal Perspective in civil engineering

Outcome (i): a recognition of the need for and an ability to engage in lifelong learning
KPI (71): Independent learning
KPI (72): Assignment completion
KPI (73): Continuous improvement
KPI (74): Capability to think for one's self
KPI (75): Responsibility for creating one's own learning opportunities
KPI (76): Applying learned materials and concepts in a format different from that taught in class
KPI (77): Participation in professional and technical societies

Outcome (j): **a knowledge of contemporary issues**
KPI (78): knowledge of current events in the computer engineering discipline
KPI (79): Current job market
KPI (80): Ability to discuss major political issues at national, state and local levels

Outcome (k): Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
KPI (81): Lab procedure
KPI (82): experimental plan of data gathering
KPI (83): Data documentation
KPI (84): Development and implementation of logical experimental procedures
KPI (85): Simulation Tools
KPI (86): Instruments Operation
KPI (87): Relate data to theory
KPI (88): Measurement awareness of errors
KPI (89): Seeking information

a	An ability to apply Knowledge of mathematics, science and engineering
b	An ability to design and conduct experiments, analyze and interpret data
c	An ability to design a system, component or process to meet desired needs within realistic constraints
d	The ability to function on multidisciplinary teams
e	An ability to identify, formulate, and solve engineering problems
f	An understanding of professional and ethical responsibility
g	An ability to communicate effectively
h	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context
i	A recognition of the need for and an ability to engage in lifelong learning
j	A knowledge of contemporary issues
k	Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Academic Study Plan for *Structural Engineering Track* - Civil Engineering Department

Level		1	2	3	4	5	6	7	Units
3rd	**Course Code**	**ARB 101**	**MATH 105**	**PHY 103**	**GE 101**	**GE 102**	**GE 103**		17
	Course Name	Arabic Language Skills	Differential Calculus	General Physics	Fundamentals of Engineering Technology	Fundamentals of Engineering Drawing	Engineering Mechanics (Statics)		
	Units/hours	2 (2-0-0)	3 (3-1-0)	4 (3-1-2)	2 (1-0-2)	3 (1-0-4)	3 (3-1-0)		
	Pre-requisites	-	-	-	-	-	-		
4th	**Course Code**	**MATH 106**	**MATH 107**	**GE 108**	**GE 105**	**CE 101**	**CE 102**		17
	Course Name	Integral Calculus	Algebra and Analytical Geometry	Engineering Mechanics (Dynamics)	Engineering Chemistry	Engineering Geology	Civil Engineering Drawing		
	Units/hours	3 (3-1-0)	3 (3-1-0)	3 (3-1-0)	3 (3-1-0)	2 (2-1-0)	3 (1-0-4)		
	Pre-requisites	*MATH 105*	-	*GE 103*	-	-	*GE 102*		
5th	**Course Code**		**MATH 204**	**CE 210**	**CE 214**	**CE 240**	**CE 370**		17
	Course Name	Elective course 1 Islamic Culture	Differential Equations	Soil Mechanics and Foundation Engineering 1	Structural Analysis 1	Hydraulics 1	Surveying 1		
	Units/hours	2 (2-0-0)	3 (3-1-0)	3 (2-1-2)	3 (3-1-0)	3 (2-1-2)	3 (2-1-2)		
	Pre-requisites	-	*MATH 106*	*CE 101*	*GE 103*	*GE 108*	*MATH 107*		
6th	**Course Code**	**STAT 101**	**CEN 209**	**CE 217**	**CE 212**	**CE 215**	**CE 241**		18
	Course Name	Statistics and Probability	Computer Programming for Civil Engg.	Reinforced Concrete Design 1	Properties and Strength of Materials 1	Structural Analysis 2	Hydraulics 2		
	Units/hours	3 (3-1-0)	3 (2-0-2)	3 (3-2-0)	3 (2-1-2)	3 (3-1-0)	3 (2-1-2)		
	Pre-requisites	-	-	*CE 214*	-	*CE 214*	*GE 240*		
7th	**Course Code**		**GE 306**	**CE 311**	**CE 360**	**CE 362**	**CE 371**	**CE 380**	17
	Course Name	Elective course 2 Islamic Culture	Engineering Report Writing	Soil Mechanics and Foundation Engineering 2	Environmental Engineering 1	Water Supply and Sewage Engineering	Surveying 2	Highway and Traffic Engineering 1	
	Units/hours	2 (2-0-0)	2 (2-0-0)	3 (2-1-2)	2 (2-0-0)	2 (2-1-0)	3 (2-1-2)	3 (3-1-0)	
	Pre-requisites	-	*STAT 101*	*CE 210*	*GE 105*	*CE 241*	*CE 270*	*CE 270*	
8th	**Course Code**		**MATH 254**	**CE 313**	**CE 316**	**CE 318**	**CE 320**	**CE 399**	17
	Course Name	Elective general course 1	Numerical Methods	Properties and Strength of Materials 2	Structural Analysis 3	Reinforced Concrete Design 2	Steel Structures Design 1	Practical Training	
	Units/hours	2 (2-0-0)	3 (3-1-0)	3 (2-1-2)	3 (3-1-0)	3 (3-2-0)	3 (3-2-0)	0	
	Pre-requisites	-	*MATH 204*	*CE 212*	*CE 215*	*CE 217*	*CE 214*	*Complete 90 Units*	

9th	**Course Code**		**GE 407**	**CE 425**	**CE 419**	**CE 421**	**CE 42-**	**CE 498**	**17**
	Course Name	Elective course 3 Islamic Culture	Engineering Economy	Computer Applications in Structural Engg.	Reinforced Concrete Design 3	Steel Structures Design 2	Elective Course (1)	Graduation Project Part 1	
	Units/hours	2 (2-0-0)	2 (2-1-0)	2 (1-0-2)	3 (3-2-0)	3 (3-2-0)	3 (3-1-0)	2 (1-0-2)	
	Pre-requisites	-	-	*CEN 209*	*CE 318*	*CE 320*	-	-	
10th	**Course Code**		**GE 408**	**CE 422**	**CE 423**	**CE 424**	**CE 43-**	**CE 499**	**16**
	Course Name	Elective general course 2	Project Management	Methods and Equipment of Construction	Contracts and Specifications	Buildings Construction	Elective Course (2)	Graduation Project Part 2	
	Units/hours	2 (2-0-0)	2 (2-1-0)	2 (2-1-0)	2 (2-1-0)	3 (3-1-0)	3 (3-1-0)	2 (1-0-2)	
	Pre-requisites	-	-	-	-	*CE 419*	-	*CE 498*	