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<tr><td colspan="2">Academic Year: 2023-2024</td><td>Semester: Fall</td><td>Starting Date: 15-10-2023</td></tr>
<tr><td>Course Name</td><td colspan="3">Novel Concrete Materials</td></tr>
<tr><td>Module Language</td><td colspan="3">English</td></tr>
<tr><td>Instructor</td><td colspan="3">Ass. Prof. Dr. Dilshad K. Jaf</td></tr>
<tr><td>Teaching Assistance(s)</td><td colspan="3">None</td></tr>
<tr><td>College/University</td><td colspan="3">College of Engineering – Salahaddin University-Erbil</td></tr>
<tr><td>Department</td><td colspan="3">Civil Engineering</td></tr>
<tr><td>Semester Duration</td><td colspan="3">15 weeks</td></tr>
<tr><td>Course Overview</td><td colspan="3">This course explores the materials science of Novel Concrete Materials and attempts to bring about the understanding of new novel materials in concrete industry.
Despite characteristics such as high mechanical strength, low cost, availability, and durability of concrete and cement-based materials, there are some issues associated with Novel materials that are the subject of current and/or future research.
The course discusses the study of selected topics regarding Novel Materials in concrete.
The course teaches the engineering thought process to give Post graduate students a better understanding of Novel Materials of concrete.</td></tr>
<tr><td>Course Objectives</td><td colspan="3">The objective of this course is :
To define and understand concepts related Novel Concrete Materials which involves types and property of concrete and different adhesive materials and its vital use for safe, economic development for the buildings.
To present the foundations of many basic Engineering tools and concepts related to Novel Concrete Materials and Civil Engineering.
To give an experience in the implementation of Engineering concepts which are applied in field of Civil Engineering.</td></tr>
<tr><td>Course Contents</td><td colspan="3">Week Lecture<table><tr><td>1st</td><td>Introduction</td></tr><tr><td>2nd</td><td>Geopolymer Concrete</td></tr><tr><td>3rd</td><td>Self-healing Concrete</td></tr><tr><td>4th</td><td>Self-Compacting Concrete</td></tr><tr><td>5th</td><td>Pervious Concrete</td></tr><tr><td>6th</td><td>High Performance Concrete</td></tr><tr><td>7th</td><td>Ultra-High Performance concrete</td></tr><tr><td>8th</td><td>Crump Rubber asphalt mixtures</td></tr></table></td></tr>
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9th	Midterm Exam
10th	Ultra High Strength Concrete
11th	Green concrete (waste materials, recycled aggregates and etc.);
12th	Illuminated concrete
13th	Roller Compacted Concrete
14th	Seminar Presentation
15th	Final Exam

Textbooks and References	1. Advanced Concrete Technology - Constituent Materials, John Newman and Ban Seng Choo 2. Advanced Concrete Technology - Concrete Properties, John Newman and Ban Seng Choo 3. Advanced Concrete Technology – Processes, John Newman and Ban Seng Choo 4. Advanced Concrete Technology - Testing & Quality, John Newman and Ban Seng Choo
Teaching Style	3 hrs. in Class
Requirements for credit points	For the award of credit points, it is necessary to pass the module exam. It contains: An examination during the academic semester, Quizzes, Assignments, Article review, and Final examination. **Student's attendance is required in all classes**.
Credit ECTS	6
Grade Distribution	The following grade system is used for the evaluation of the module exam: The module exam is based on the summation of two categories of evaluations: **First: (50%)** of the mark is based on the academic semester effort which includes 1. without Article Review - Midterm Exam = 20%. - Quiz = 15% - Seminar = 15% 2. with Article Review - Midterm Exam = 20%. - Quiz = 5% - Seminar = 10% - Review Article = 15% **Second: (50%)** of the mark is based on the final examination that is comprehensive for the whole of the study materials reviewed during the academic semester.
Workload	Workload 10hrs/w (150hrs/s): Contact face-to-face 3hrs/w (45hrs/s) and Non-Contact Self learning 7hrs/w (105hrs/s)