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| **COURSE DETAILS** | |
| **Course Name** | **UNCONVENTIONAL PETROLEUM AND NATURAL GAS RESOURCES** |

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| **Language of Instruction** | Turkish |

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| **Level of Instruction** | Associate | Undergraduate | MSc(X) | Ph.D. () |

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| **Education System** | | |
| Formal Education (X) | Distance Education () | Other |

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| **Type of Course** | | **Course Area Code** | **Course Optical Code** |
| Comp () | Elective (x) |  |  |

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| **Theory** | **Practice Time** | **Total Hours** | **Semester** | **National Credit** | **ECTS Credits** |
| 3 | 0 | 3 | Spring | 3 | 6 |

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| **Course Aim** | |  |  | | --- | --- | |  | The aim of this course is to provide an advanced understanding about unconventional HC systems, types of unconventional HC and research techniques and methods. | |

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| **Course Content** | |  |  | | --- | --- | | Unconventional HC definition, origins, formation and depositional environment. Geology and geochemistry of unconventional HC. Example from turkey and the world. Resources assessment methods for unconventional HC. Environmental impacts of unconventional oil technology. |  | |

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| **Prerequisites** | * Unconventional HC definition, origins, formation and depositional environment. * Geology and geochemistry of unconventional HC * Example from turkey and the world * Resources assessment methods for unconventional HC. * Environmental impacts of unconventional oil technology. |

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| **Course Instructor** | Asist Prof. Derya KOCA |

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| **Assistant Instructor** |  |

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| **Text Book / Recommended Reading** | Zou, C., 2013. Unconventional Petroleum Geology, Elsevier, China.  Ahmed, U., Meehan, D.N., 2016. Unconventional Oil and Gas Resources Exploitation and Development, CRC Press, Boca Raton.  Zee Ma, Y., Holditch S.A., 2016. Unconventional Oil and Gas Resources Handbook. Gulf Professional Publishing, Oxford.  Yen, T.F. and Chilingarian, G.V., 1976. Oil Shale, Elsevier SPC, 305p.  Lee, S., 1991. Oil Shale Technology. CRC Press, 261 p. |

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| **Grading Evaluation System** | | |
| (X) Direct Conversion System |  | () Curve |
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|  | **Tools** | **Number** | **Rate** |
|  | Attendance and Participation | 15 | 5 |
|  | Research homework | 1 | 15 |
|  | Quiz | 4 | 16 |
| **Measurement and Evaluation** | Presentations | 1 | 10 |
|  | Literature | 1 | 4 |
|  | Semester Exam | 1 | 50 |
|  | **Total** |  | **100%** |

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| **Subjects by Week** | | |
| **Week** | **Topics** | **Teaching Methods** |
| 1 | Introduction | Lecture, discussion, sampling. |
| 2 | Energy sources, petroleum geology | Lecture, discussion, sampling. |
| 3 | Definition and origin of unconventional HC | Lecture, discussion, sampling. |
| 4 | Formation of unconventional HC | Lecture, discussion, sampling. |
| 5 | Types of Unconventional HC | Lecture, discussion, sampling. |
| 6 | Geochemistry of Unconventional HC | Lecture, discussion, sampling. |
| 7 | Reservoirs of Unconventional HC | Lecture, discussion, sampling. |
| 8 | Reservoirs of Unconventional HC | Lecture, discussion, sampling. |
| 9 | Research techniques and methods for Unconventional HC | Lecture, discussion, sampling. |
| 10 | Geophysics techniques for Unconventional HC | Lecture, discussion, sampling. |
| 11 | Tight oil and gas, shale oil and gas | Lecture, discussion, sampling. |
| 12 | CBM, heavy oil and bitumen | Lecture, discussion, sampling. |
| 13 | Oil shale, gas hydrates | Lecture, discussion, sampling. |
| 14. | Other Unconventional HC resources | Lecture, discussion, sampling. |
| 15 | Environmental impacts of unconventional oil technology. | Lecture, discussion, sampling. |
| 16 | Examples from Turkey and the World | Lecture, discussion, sampling. |
| 17 | Final | Written exam |

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| **Program Outcomes** | | 01 | 02 | | 03 | 04 |
| PO 01 | Unconventional HC definition, origins, formation and depositional environment. | 5 | 4 | | 4 | 5 |
| PO 02 | Geology and geochemistry of unconventional HC | 4 | 5 | | 5 | 4 |
| PO 03 | Example from turkey and the world | 5 | 4 | | 4 | 5 |
| PO 04 | Resources assessment methods for unconventional HC. | 5 | 5 | | 5 | 5 |
| PO 05 | Environmental impacts of unconventional oil technology. | 5 | 5 | | 5 | 5 |

\* 1: Very Low 2: Low 3: Medium 4: High 5: Very high

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| **Student workload / ECTS account** | | | | |
| **Activities** | **Number** | **Preparation** | **Duration of Activity** | **Total Workload** |
| Theoretical Course | 15 | - | 3 | 45 |
| Scientific homework | 2 | - | 15 | 30 |
| The library search | 5 | - | 15 | 75 |
| Presentation | 2 | - | 10 | 20 |
| Quiz | 1 | - | 2 | 2 |
| Semester Exam | 1 | - | 2 | 2 |
| Total Workload (Hour) | 23 |  |  | 174 |
| Roll [Total Workload (hours) / week work load (30)] = ECTS Credit | | | | 174/30=6 |