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| **COURSE IDENTIFICATION FORM** |
| **Course Code and Name:** SM 6050 BIOTECHNOLOGICAL METHODS IN FRESHWATER FINFISH AQUACULTURE | **Department of :** Fisheries and Aquaculture |
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| **Semester** |

 | **Theoretic Hour** | **Practice Hour** | **Total Hour** | **Credits** | **ECTS** | **Education Language** | **Type: Compulsory Elective** |
| Fall | 3 | 0 | 3 | 3 | 5 | Turkish | Optional |
| **Prerequisite (s)** | - |
| **Instructor** | Prof. Dr. Volkan KIZAK | **Mail :** volkan.kizak@munzur.edu.tr**Web :** |
| **Course Assistant** | - | **Mail :****Web :** |
| **Groups / Classes** | Doctorate |  |
| **Course Aim** |  Description of the biotechnological methods in freshwater aquaculture, comprehension of importance these methods in aquaculture. |
| **Course Goals** |  Ability to understand biotechnological methods in freshwater aquaculture and comprehend the importance of these methods in terms of efficiency and apply commercially. |
| **Course Learning Outs and Proficiencie*s*** | To be able to understand biotechnological terms and methods, explain the importance of these methods in terms of efficiency, apply them in an aquaculture facility as a aquaculture engineer. |
| **Course Basic and Auxiliary Contexts** | 1. Encyclopedia of Aquaculture (2000), Ed.; Stickney R.R., p.1063, John Wiley & Sons, USA.
2. Aquaculture Principles and Practices (2005), Eds.; Pillay T.V.R. and Kutty M.N., p624, Blackwell Publishing, UK.
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| **Methods of Give a Lecture** | Theoretical |

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| **Assessment Criteria** |  | **If Available, to Sign (x)** | **General Average Percentage (%) Rate** |
| **1. Quiz** | **X** |  |
| **2. Quiz** |  |  |
| **3. Quiz** |  |  |
| **4. Quiz** |  |  |
| **5. Quiz** |  |  |
| **Oral Examination** |  |  |
| **Practice Examination (Laboratory, Project etc.)** |  |  |
| **Final Examination** | **X** |  |
| **Semester Course Plan** |
| **Week** | **Subjects** |
| **1** | What is biotechnology? |
| **2** | The importance of biotechnology in aquaculture |
| **3** | Biotechnological methods |
| **4** | The importance of sex control in freshwater fish |
| **5** | Direct sex reversal |
| **6** | Indirect sex reversal in rainbow trout |
| **7** | Super male (YY) production in Tilapia |
| **8** | Chromosome manipulation |
| **9** | Poliploidi, androgenesis and gynogenesis |
| **10** | Transgenic fishes |
| **11** | Hybridization |
| **12** | Hybrid species in aquaculture |
| **13** | Sperm and egg preservation |
| **14** | Photoperiod applications in fish |