**ESKİŞEHİR OSMANGAZİ ÜNİVERSİTESİ MECHANICAL ENGINEERING DEPARTMENT PROGRAM OUTCOMES**

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| **NO** | **PROGRAM OUTCOMES** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. |
| 9 | Understanding of professional and ethical issues and taking responsibility. |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |

**NATIONAL QUALIFICATIONS FRAMEWORK FOR HIGHER EDUCATION IN TURKEY (NQF-HETR)**

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| **NQF-HETR LEVEL** | **KNOWLEDGE**   * **Theoretical** * **Conceptual** | **SKILLS**   * **Cognitive** * **Practical** | **COMPETENCES** | | | |
| **Competence to Work Independently and Take Responsibility** | **Learning Competence** | **Communication and Social Competence** | **Field Specific Competence** |
| BACHELOR'S | 1) Possess advanced level theoretical and practical knowledge supported by textbooks with updated information, practice equipments and other resources. | 2) Use of advanced theoretical and practical knowledge within the field.  3) Interpret and evaluate data, define and analyze problems, develop solutions based on research and proofs by using acquired advanced knowledge and skills within the field. | 4) Conduct studies at an advanced level in the field independently.  5) Take responsibility both as a team member and individually in order to solve unexpected complex problems faced within the implementations in the field.  6) Planning and managing activities towards the development of subordinates in the framework of a project. | 7) Evaluate the knowledge and skills acquired at an advanced level in the field with a critical approach.  8) Determine learning needs and direct the learning.  9) Develop positive attitude towards lifelong learning. | 10) Inform people and institutions, transfer ideas and solution proposals to problems in written and orally on issues in the field.  11) Share the ideas and solution proposals to problems on issues in the field with professionals and non-professionals by the support of qualitative and quantitative data.  12) Organize and implement project and activities for social environment with a sense of social responsibility.  13) Monitor the developments in the field and communicate with peers by using a foreign language at least at a level of European Language Portfolio B1 General Level.  14) Use informatics and communication technologies with at least a minimum level of European Computer Driving License Advanced Level software knowledge. | 15) Act in accordance with social, scientific, cultural and ethic values on the stages of gathering, implementation and release of the results of data related to the field.  16) Possess sufficient consciousness about the issues of universality of social rights, social justice, quality, cultural values and also, environmental protection, worker's health and security. |

**NQF-HETR ENGINEERING BASIC FIELD QUALIFICATIONS (BFQ)**

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| **NQF-HETR LEVEL** | **KNOWLEDGE**   * **Theoretical** * **Conceptual** | **SKILLS**   * **Cognitive** * **Practical** | **COMPETENCES** | | | |
| **Competence to Work Independently and Take Responsibility** | **Learning Competence** | **Communication and Social Competence** | **Field Specific Competence** |
| BACHELOR'S | 1) Has sufficient background on mathematics, science and related engineering subjects. | 2) Utilizes theoretical and practical knowledge in mathematics, science and field related knowledge together in solving problems in engineering.  3) Determines, recognizes, formulates and solves problems in engineering; and for this purpose chooses and applies suitable analytical methods and modelling procedures.  4) Analyses a complete system, a system’s component or a process and designs it under realistic constraints in order to comply with system requirements; and along these lines employs modern design procedures.  5) Designs and performs experiments; collects, analyses and interprets data.  6) Design experiments, conduct experiments, collect data, analyze and interpret results. | 7) Works effectively individually or in multidisciplinary teams.  8) Accesses information and for this purpose performs literature survey, uses databases and other information resources. | 9) Accesses information and for this purpose performs literature survey, uses databases and other information resources.  10) Is aware of requirements for Lifelong Learning; observes developments in science and technology and improves himself/herself in a continuous manner.  11) Utilizes theoretical and practical knowledge in mathematics, science and field related knowledge together in solving problems in engineering.  12) Determines, recognizes, formulates and solves problems in engineering; and for this purpose chooses and applies suitable analytical methods and modelling procedures.  13) Analyses a complete system, a system’s component or a process and designs it under realistic constraints in order to comply with system requirements; and along these lines employs modern design procedures.  14) Chooses and utilizes required modern techniques and tools for engineering applications.  15) Works effectively individually or in multidisciplinary teams. | 16) Uses information and communication technologies as required by his/her field of study at the level of Advanced Level Software ECDL Certificate.  17) Communicates verbally and in written communication; utilizes at least one foreign language at the level of European Language Portfolio B1.  18) Communicates by using technical drawing.  19) Accesses information and for this purpose performs literature survey, uses databases and other information resources.  20) He/she is aware of the global and societal effects of engineering solutions and applications; and is aware of topics in innovation, and entrepreneurship and gains insight about current problems. | 21). Has the sense of responsibility in professional and ethical issues.  22) Has awareness in project management, workplace applications, health of workers, environmental issues and job safety; has awareness in legal consequences of engineering applications.  23) He/she is aware of the global and societal effects of engineering solutions and applications; and is aware of topics in innovation, and entrepreneurship and gains insight about current problems. |

**RELATION BETWEEN PROGRAM OUTCOMES AND (NQF-HETR)-BFQ**

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| **PROGRAM OUTCOMES** | **NQF-HETR** | **BFQ** |
| 1) Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. | 1, 2 | 1, 2, 11 |
| 2) Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. | 2, 3, 7 | 3, 4, 11, 12 |
| 3) Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. | 3, 7 | 3, 4, 13 |
| 4) Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. | 11, 14 | 5, 12, 14, 16 |
| 5) In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. | 2, 3, 7, 11 | 6 |
| 6) Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. | 4, 5, 6 | 7, 15 |
| 7) Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. | 6, 10, 11, 12, 13 | 17, 18 |
| 8) Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | 1, 7, 8, 9 | 8, 9, 10, 19 |
| 9) Understanding of professional and ethical issues and taking responsibility. | 15, 16 | 8, 9, 19, 21 |
| 10) Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. | 5, 6 | 20, 22, 23 |
| 11) Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. | 8, 12, 15, 16 | 5, 13, 20, 22, 23 |