

## MACHINE COMPONENTS

|    |                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | Course Title:                                           | MACHINE COMPONENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 2  | Course Code:                                            | BSM3807                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 3  | Type of Course:                                         | Compulsory                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 4  | Level of Course:                                        | First Cycle                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 5  | Year of Study:                                          | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 6  | Semester:                                               | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 7  | ECTS Credits Allocated:                                 | 3.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 8  | Theoretical (hour/week):                                | 2.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 9  | Practice (hour/week):                                   | 1.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 10 | Laboratory (hour/week):                                 | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 11 | Prerequisites:                                          | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 12 | Language:                                               | Turkish                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 13 | Mode of Delivery:                                       | Face to face                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 14 | Course Coordinator:                                     | Prof. Dr. Halil Ünal                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 15 | Course Lecturers:                                       | yok                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 16 | Contact information of the Course Coordinator:          | Prof.Dr. Halil Ünal<br>e-posta : hunal@uludag.edu.tr<br>Telefon: 0 224 2941607<br>Adres: Bursa Uludağ Üniversitesi, Ziraat Fakültesi, Biyosistem Mühendisliği Bölümü, Görükle Kampüsü, 16059, Nilüfer/BURSA                                                                                                                                                                                                                                                                  |
| 17 | Website:                                                | <a href="http://www20.uludag.edu.tr/~okursoy">http://www20.uludag.edu.tr/~okursoy</a>                                                                                                                                                                                                                                                                                                                                                                                        |
| 18 | Objective of the Course:                                | the loads and conditions of farm machinery driven machine elements, depending on the intended use of the appropriate cross-sectional size and strength calculations and design elements, bolts, rivets, welding and welded joints, belt and pulley layouts, designs, power transmission shafts, helical springs, spiral springs and leaf calculation of springs, gears and gear mechanisms, brakes, couplings and bearings with the theoretical approaches to these elements |
| 19 | Contribution of the Course to Professional Development: | The student learns the design and planning of each element that constitutes machinery and equipment and applies it in agricultural machinery and other machinery manufacturing sectors.                                                                                                                                                                                                                                                                                      |
| 20 | Learning Outcomes:                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|    | 1                                                       | To know the basic machine element and parts                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|    | 2                                                       | To understand the technical information and accounts for the work of machine parts                                                                                                                                                                                                                                                                                                                                                                                           |
|    | 3                                                       | According to the technique used in machine design and functional elements of the right to choose an approach                                                                                                                                                                                                                                                                                                                                                                 |
|    | 4                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|    | 5                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|    | 6                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|    | 7                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|    | 8                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|    | 9                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|    | 10                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 21 | Course Content:                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|    | Course Content:                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

| Week                                                             | Theoretical                                                                                                                                                                                   | Practice                                                                                                                                           |                 |                        |
|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------|
| 1                                                                | The aim of the course, what the lesson to be conducted, test method, the course in order to achieve the expected benefits will be explained that the students what their own responsibilities | introduction of machine elements                                                                                                                   |                 |                        |
| 2                                                                | The basic machine elements expansion, elastic modulus, moment of inertia                                                                                                                      | The basic machine elements expansion, elastic modulus, moment of inertia                                                                           |                 |                        |
| 3                                                                | Fundamental strength properties of machine elements and materials and these materials                                                                                                         | Introduction of machine parts, standards, teaching                                                                                                 |                 |                        |
| 4                                                                | Design of machine elements, and Soderberg and Castigliano criteria                                                                                                                            | Information for Mechanical Design. The main problems encountered and solutions                                                                     |                 |                        |
| 5                                                                | Power transmission shafts and shafts. Shafts, torque, moment, torsion and bending concepts                                                                                                    | Power transmission shafts and shafts. Shafts, torque, moment, torsion and bending concepts                                                         |                 |                        |
| 6                                                                | Machine elements, links and welded joints                                                                                                                                                     | Machine elements, links and welded joints                                                                                                          |                 |                        |
| 7                                                                | midterm exam                                                                                                                                                                                  | Machine elements, links and welded joints                                                                                                          |                 |                        |
| 8                                                                | Machine elements, links and welded joints                                                                                                                                                     | Removable links. Screws on designs. rivet connections                                                                                              |                 |                        |
| 9                                                                | Removable links. Screws on designs. rivet connections                                                                                                                                         | problem solving session                                                                                                                            |                 |                        |
| 10                                                               | Springs and spring designs used in farm machinery. Leaf springs, helical springs and damping and vibration problems                                                                           | Springs and spring designs used in farm machinery. Leaf springs, helical springs and damping and vibration problems                                |                 |                        |
| 11                                                               | Power transmission components, belt and pulley mechanisms, gears and gear boxes                                                                                                               | Power transmission components, belt and pulley mechanisms, gears and gear boxes                                                                    |                 |                        |
| Activites                                                        |                                                                                                                                                                                               | Number                                                                                                                                             | Duration (hour) | Total Work Load (hour) |
| Theoretical                                                      | 14                                                                                                                                                                                            | 14                                                                                                                                                 | 1.00            | 14.00                  |
| Practicals/Labs                                                  |                                                                                                                                                                                               | 14                                                                                                                                                 | 2.00            | 28.00                  |
| Self study and preparation                                       |                                                                                                                                                                                               | 2                                                                                                                                                  | 18.00           | 36.00                  |
| Textbooks, References and/or Other                               |                                                                                                                                                                                               | 1                                                                                                                                                  | 18.00           | 18.00                  |
| Homeworks                                                        |                                                                                                                                                                                               | 1                                                                                                                                                  | 4.00            | 4.00                   |
| Projects                                                         |                                                                                                                                                                                               | 1                                                                                                                                                  | 10.00           | 10.00                  |
| Field Studies                                                    |                                                                                                                                                                                               | 0                                                                                                                                                  | 0.00            | 0.00                   |
| Midterm exams                                                    |                                                                                                                                                                                               | 1                                                                                                                                                  | 2.00            | 2.00                   |
| Others                                                           |                                                                                                                                                                                               | 0                                                                                                                                                  | 0.00            | 0.00                   |
| Final Exams                                                      |                                                                                                                                                                                               | 1                                                                                                                                                  | 2.00            | 2.00                   |
| Assesment                                                        |                                                                                                                                                                                               |                                                                                                                                                    |                 |                        |
| Total Work Load                                                  |                                                                                                                                                                                               |                                                                                                                                                    |                 | 98.00                  |
| Total work load/ 30 hr                                           |                                                                                                                                                                                               | R                                                                                                                                                  |                 | 3.20                   |
| ECTS Credit of the Course                                        |                                                                                                                                                                                               |                                                                                                                                                    |                 | 3.00                   |
| Quiz                                                             |                                                                                                                                                                                               | 0                                                                                                                                                  | 0.00            |                        |
| Home work-project                                                |                                                                                                                                                                                               | 1                                                                                                                                                  | 15.00           |                        |
| Final Exam                                                       |                                                                                                                                                                                               | 1                                                                                                                                                  | 60.00           |                        |
| Total                                                            |                                                                                                                                                                                               | 3                                                                                                                                                  | 100.00          |                        |
| Contribution of Term (Year) Learning Activities to Success Grade |                                                                                                                                                                                               | 40.00                                                                                                                                              |                 |                        |
| Contribution of Final Exam to Success Grade                      |                                                                                                                                                                                               | 60.00                                                                                                                                              |                 |                        |
| Total                                                            |                                                                                                                                                                                               | 100.00                                                                                                                                             |                 |                        |
| Measurement and Evaluation Techniques Used in the Course         |                                                                                                                                                                                               | Measurement and evaluation is carried out according to the principles of Bursa uludag University Associate and Undergraduate Education Regulation. |                 |                        |
| 24                                                               | ECTS / WORK LOAD TABLE                                                                                                                                                                        |                                                                                                                                                    |                 |                        |

| 25                                                    | CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS |     |     |       |     |     |          |     |     |        |      |      |             |      |      |      |
|-------------------------------------------------------|---------------------------------------------------------------|-----|-----|-------|-----|-----|----------|-----|-----|--------|------|------|-------------|------|------|------|
|                                                       | PQ1                                                           | PQ2 | PQ3 | PQ4   | PQ5 | PQ6 | PQ7      | PQ8 | PQ9 | PQ10   | PQ11 | PQ12 | PQ13        | PQ14 | PQ15 | PQ16 |
| ÖK1                                                   | 2                                                             | 2   | 2   | 2     | 3   | 2   | 2        | 2   | 2   | 5      | 5    | 2    | 0           | 0    | 0    | 0    |
| ÖK2                                                   | 3                                                             | 5   | 4   | 2     | 5   | 2   | 2        | 4   | 2   | 4      | 5    | 3    | 0           | 0    | 0    | 0    |
| ÖK3                                                   | 4                                                             | 5   | 3   | 3     | 5   | 2   | 2        | 4   | 2   | 4      | 5    | 3    | 0           | 0    | 0    | 0    |
| LO: Learning Objectives    PQ: Program Qualifications |                                                               |     |     |       |     |     |          |     |     |        |      |      |             |      |      |      |
| Contribution Level:                                   | 1 very low                                                    |     |     | 2 low |     |     | 3 Medium |     |     | 4 High |      |      | 5 Very High |      |      |      |