**Course Description Form**

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| 1. Course Name: | | | | | | | | |
| Biomechanics I | | | | | | | | |
| 1. Course Code: | | | | | | | | |
| WBM-41-01 | | | | | | | | |
| 1. Semester / Year: | | | | | | | | |
| 1st Semester / 2025 \2024 | | | | | | | | |
| 1. Description Preparation Date: | | | | | | | | |
| 19/4/2024 | | | | | | | | |
| 1. Available Attendance Forms: | | | | | | | | |
| Weekly (Theoretical & Practical) | | | | | | | | |
| 1. Number of Credit Hours (Total) / Number of Units (Total) | | | | | | | | |
| 45 Hrs. Theoretical & 45 Hrs. Practical / 3 Units | | | | | | | | |
| 1. Course administrator's name (mention all, if more than one name) | | | | | | | | |
| Name: Natik aziz | | | | | | | | |
| 1. Course Objectives | | | | | | | | |
| **Course Objectives** | | | | * Understand the Fundamentals: Students should gain a solid understanding of the mechanical properties of Human Joints, and the mechanical interactions between forces and the human body. * Apply Knowledge Practically: Encourage the application of theoretical concepts in real-world situations, such as orthopedic biomechanics and rehabilitation. * Develop Problem-Solving Skills: Students should be able to analyze complex biomechanical problems * Cultivate Research Skills: Teach students how to conduct empirical research, analyze data, and present findings effectively. | | | | |
| 1. Teaching and Learning Strategies | | | | | | | | |
| **Strategy** | | 1. Teaching Methods   * Lectures: Use lectures to introduce core theoretical concepts. Incorporate multimedia presentations to illustrate complex biomechanical phenomena and their applications in biomedical. * Case Studies: Analyze real-life case studies that require students to apply their theoretical knowledge to solve practical problems.   2. Learning Activities   * Laboratory Experiments: Design lab sessions that allow students to test and analyze mechanical properties, and use biomechanical testing equipment. * Project-Based Learning: Assign projects that require design, implementation, and testing of models related to biomechanics, encouraging teamwork and innovation.   3. Continuous Improvement   * Feedback: Regularly collect feedback from students regarding the clarity of instructions, the relevance of course content, and the effectiveness of teaching methods. * Curriculum Updates: Continuously update the curriculum based on the latest scientific advancements in biomechanics. | | | | | | |
| 1. Course Structure | | | | | | | | |
| **Week** | **Hours** | | **Required Learning Outcomes** | | | **Unit or subject name** | **Learning method** | **Evaluation method** |
| 1 | 6 | | Introducing importance of Biomechanics | | | Introduction to  biomechanics | Theoretical & Practical | Daily test and oral questions |
| 2 | 6 | | Ability to analyze  human movements | | | kinematics  concepts for  analyzing human  motion | Theoretical & Practical | Daily test and oral questions |
| 3 | 6 | | Ability to analyze  the forces acting on  movement | | | kinetic concepts  for analyzing  human motion | Theoretical & Practical | Daily test and oral questions |
| 4 | 6 | | Mechanical analysis  Orthopedics and mobility | | | The  biomechanics of  human bone and  development (1) | Theoretical & Practical | Daily test and oral questions |
| 5 | 6 | | Mechanical analysis  Orthopedics and mobility | | | The  biomechanics of  human bone and  development (2) | Theoretical & Practical | Daily test and oral questions |
| 6 | 6 | | Ability to analyze  movements of the skeleton  skeletal and joint movements of the | | | the  biomechanics of  human skeletal  articulations (1) | Theoretical & Practical | Daily test and oral questions |
| 7 | 6 | | Ability to analyze  movements of the skeleton  skeletal and joint movements of the | | | the  biomechanics of  human skeletal  articulations (2) | Theoretical & Practical | Daily test and oral questions |
| 8 | 6 | | Analyzing Muscle Strength  human body | | | the  biomechanics of  human skeletal  muscle (1) | Theoretical & Practical | Daily test and oral questions |
| 9 | 6 | | Analyzing Muscle Strength  human body | | | the  biomechanics of  human skeletal  muscle (2) | Theoretical & Practical | Daily test and oral questions |
| 10 | 6 | | Mechanical analysis  Human body Upper limbs | | | the  biomechanics of  human upper  extremity (1) | Theoretical & Practical | Daily test and oral questions |
| 11 | 6 | | Mechanical analysis  Human body Upper limbs | | | the  biomechanics of  human upper  extremity (2) | Theoretical & Practical | Daily test and oral questions |
| 12 | 6 | | Mechanical analysis Human body Lower limbs | | | the  biomechanics of  human lower  extremity (1) | Theoretical & Practical | Daily test and oral questions |
| 13 | 6 | | Mechanical analysis Human body Lower limbs | | | the  biomechanics of  human lower  extremity (2) | Theoretical & Practical | Daily test and oral questions |
| 14 | 6 | | Human body spine mechanical Analysis | | | the  biomechanics of  human spine (1) | Theoretical & Practical | Daily test and oral questions |
| 15 | 6 | | Human body spine mechanical Analysis | | | the  biomechanics of  human spine (2) | Theoretical & Practical | Daily test and oral questions |
| 1. Course Evaluation | | | | | | | | |
| • Formative Assessments: Include quizzes, in-class activities, and lab reports to provide ongoing feedback and adjust teaching approaches as needed.  • Summative Assessments: Conduct mid-term and final exams to evaluate comprehensive understanding. | | | | | | | | |
| 1. Learning and Teaching Resources | | | | | | | | |
| Required textbooks (curricular books, if any) | | | | | Basic Biomechanics (Susan J. Hall) | | | |
| Main references (sources) | | | | | Basic Biomechanics (Susan J. Hall) | | | |
| Recommended books and references (scientific journals, reports...) | | | | | Journal of Biomechanics, ISSN 0021-9290 | | | |
| Electronic References, Websites | | | | | www.sciencedirect.com | | | |