**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:
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| 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)
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| Name: Natik aziz  |
| 1. Course Objectives
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| **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.
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| 1. Teaching and Learning Strategies
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| **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.
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| 1. Course Structure
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| **Week**  | **Hours**  | **Required Learning Outcomes**  | **Unit or subject name**  | **Learning method**  | **Evaluation method**  |
| 1 | 6 | Introducing importance of Biomechanics | Introduction tobiomechanics | Theoretical & Practical | Daily test and oral questions |
| 2 | 6 | Ability to analyzehuman movements | kinematicsconcepts foranalyzing humanmotion | Theoretical & Practical | Daily test and oral questions |
| 3 | 6 | Ability to analyzethe forces acting onmovement | kinetic conceptsfor analyzinghuman motion | Theoretical & Practical | Daily test and oral questions |
| 4 | 6 | Mechanical analysisOrthopedics and mobility | Thebiomechanics ofhuman bone anddevelopment (1) | Theoretical & Practical | Daily test and oral questions |
| 5 | 6 | Mechanical analysisOrthopedics and mobility | Thebiomechanics ofhuman bone anddevelopment (2) | Theoretical & Practical | Daily test and oral questions |
| 6 | 6 | Ability to analyzemovements of the skeletonskeletal and joint movements of the | thebiomechanics ofhuman skeletalarticulations (1) | Theoretical & Practical | Daily test and oral questions |
| 7 | 6 | Ability to analyzemovements of the skeletonskeletal and joint movements of the | thebiomechanics ofhuman skeletalarticulations (2) | Theoretical & Practical | Daily test and oral questions |
| 8 | 6 | Analyzing Muscle Strengthhuman body | thebiomechanics ofhuman skeletalmuscle (1) | Theoretical & Practical | Daily test and oral questions |
| 9 | 6 | Analyzing Muscle Strengthhuman body | thebiomechanics ofhuman skeletalmuscle (2) | Theoretical & Practical | Daily test and oral questions |
| 10 | 6 | Mechanical analysisHuman body Upper limbs | thebiomechanics ofhuman upperextremity (1) | Theoretical & Practical | Daily test and oral questions |
| 11 | 6 | Mechanical analysisHuman body Upper limbs | thebiomechanics ofhuman upperextremity (2) | Theoretical & Practical | Daily test and oral questions |
| 12 | 6 | Mechanical analysis Human body Lower limbs | thebiomechanics ofhuman lowerextremity (1) | Theoretical & Practical | Daily test and oral questions |
| 13 | 6 | Mechanical analysis Human body Lower limbs | thebiomechanics ofhuman lowerextremity (2) | Theoretical & Practical | Daily test and oral questions |
| 14 | 6 | Human body spine mechanical Analysis | thebiomechanics ofhuman spine (1) | Theoretical & Practical | Daily test and oral questions |
| 15 | 6 | Human body spine mechanical Analysis | thebiomechanics ofhuman spine (2) | Theoretical & Practical | Daily test and oral questions |
| 1. Course Evaluation
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| • 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
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| 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 |