



<b>Short Course Description</b>	The Sports Biomechanics course discusses the basics of body movement in the context of sports, including center of gravity, balance, force, strength, speed, and others. Lectures involve presentations, discussions and lectures, as well as assessments through written tests, assignments and practice.						
<b>References</b>	<b>Main :</b>						
	<ol style="list-style-type: none"> <li>1. Albernety, Bruce, et.al. 1997. The Biophysical Foundations of Human Movement , Australia : Human Kinetics.</li> <li>2. Bartlett, Roger. 1997. Introduction to Sports Biomechanics , London: E &amp; FN: Spon, An Imprint of Chapman &amp; Hall</li> <li>3. Carr, Gerry. 1997. Mechanics of sport, A Practioner 19s Guide . America: Human Kinetics.</li> <li>4. Hidayat, Imam. 1997. Biomekanika , Diktat, FPOK-IKIP Bandung.</li> </ol>						
	<b>Supporters:</b>						
<b>Supporting lecturer</b>	I Dewa Made Aryananda Wijaya Kusuma, S.Pd., M.Or. Bhekti Lestari, S.Pd., M.Kes. Shery Iris Zaillah, S.Pd..M.Kes. Resti Nurpratiwi, S.Ft., M.Fis.						
Week-	Final abilities of each learning stage (Sub-PO)	Evaluation		Help Learning, Learning methods, Student Assignments, [ Estimated time]		Learning materials [ References ]	Assessment Weight (%)
		Indicator	Criteria & Form	Offline ( offline )	Online ( online )		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Able to explain the important role of biomechanics in the analysis of human body movement and its implementation in improving athlete performance and sports techniques	Explain and master the role of biomechanics in sports	<b>Criteria:</b> Full marks are obtained if you do all the questions correctly  <b>Form of Assessment :</b> Participatory Activities, Practice/Performance	Lectures, Discussions, Presentations and Questions and Answers 3 X 50		<b>Material:</b> Definition of Biomechanics <b>References:</b> Bartlett, Roger. 1997. Introduction to Sports Biomechanics, London: E & FN: Spon, An Imprint of Chapman & Hall	0%

2	Able to identify and explain the types of joints for movement, types of movement and their planes of motion, as well as the types of muscle contractions involved in the biomechanical processes of the human body	<ol style="list-style-type: none"> <li>1. Able to identify the types of joints involved in human body movement</li> <li>2. Able to explain the types of movements that occur in these joints, for example flexion, extension, abduction, adduction, rotation, and others</li> <li>3. Able to identify and explain the plane of motion of each movement in the joints</li> <li>4. Able to identify and explain the types of muscle contractions involved in each movement, such as isometric contractions, isotonic contractions (eccentric contractions and concentric contractions), and isokinetic contractions</li> <li>5. Able to connect knowledge about types of joints, types of movement, and types of muscle contractions in the context of biomechanical analysis to understand the interaction of human body movements comprehensively</li> </ol>	<p><b>Criteria:</b> A perfect score if the student participates actively</p> <p><b>Form of Assessment :</b> Participatory Activities</p>	Lectures, Discussions, Presentations and Questions and Answers 3 X 50		<p><b>Material:</b> plane of motion</p> <p><b>Reference:</b> <i>Bartlett, Roger. 1997. Introduction to Sports Biomechanics, London: E &amp; FN: Spon, An Imprint of Chapman &amp; Hall</i></p>	0%
---	--	--	--	--	--	--	----

3	Able to identify and explain the types of joints for movement, types of movement and their planes of motion, as well as the types of muscle contractions involved in the biomechanical processes of the human body	<ol style="list-style-type: none"> <li>1. Able to identify the types of joints involved in human body movement</li> <li>2. Able to explain the types of movements that occur in these joints, for example flexion, extension, abduction, adduction, rotation, and others</li> <li>3. Able to identify and explain the plane of motion of each movement in the joints</li> <li>4. Able to identify and explain the types of muscle contractions involved in each movement, such as isometric contractions, isotonic contractions (eccentric contractions and concentric contractions), and isokinetic contractions</li> <li>5. Able to connect knowledge about types of joints, types of movement, and types of muscle contractions in the context of biomechanical analysis to understand the interaction of human body movements comprehensively</li> </ol>	<p><b>Criteria:</b> participate actively during lectures</p> <p><b>Form of Assessment :</b> Participatory Activities</p>	Lectures, Discussions, Presentations and Questions and Answers 3 X 50		<p><b>Material:</b> areas of movement, joints and muscle contractions</p> <p><b>References:</b> <i>Bartlett, Roger. 1997. Introduction to Sports Biomechanics, London: E &amp; FN: Spon, An Imprint of Chapman &amp; Hall</i></p>	0%
---	--	--	--	--	--	---	----

4	Able to understand and apply strength principles related to body movement, time patterns of strength, and principles of inertia in biomechanical analysis	<ol style="list-style-type: none"> <li>1. Able to comprehensively explain the principles of force related to human body movement, including the definition of force (force, direction, magnitude), types of force, and their relationship with biomechanical analysis</li> <li>2. Able to apply force principles in the analysis of human body movement, for example identifying the forces involved in certain movements, understanding how forces influence sports performance, and explaining how movements are influenced by external and internal forces</li> <li>3. Able to understand and explain force time patterns, including their relationship to the analysis of fast or slow movements, as well as how force time patterns impact the kinematics and kinetics of the human body</li> <li>4. Able to explain the concept of inertia and how this principle applies to human body movement, as well as how inertia can influence the body's response to external forces and movements</li> </ol>	<p><b>Criteria:</b> Complete assignments are accompanied by videos including references</p> <p><b>Form of Assessment :</b> Participatory Activities</p>	Lectures, Discussions, Presentations and Questions and Answers 3 X 50		<p><b>Material:</b> force, moment of inertia</p> <p><b>Reference:</b> <i>Bartlett, Roger. 1997. Introduction to Sports Biomechanics, London: E &amp; FN: Spon, An Imprint of Chapman &amp; Hall</i></p>	5%
5	Able to understand the definitions of Force-Motion, Force-Time, And Inertia	Explain and master the definitions of Force-Motion, Force-Time, and Inertia	<p><b>Criteria:</b> Active participation</p> <p><b>Form of Assessment :</b> Participatory Activities</p>	Lectures, Discussions, Presentations and Questions and Answers 3 X 50		<p><b>Material:</b> force, moment of inertia</p> <p><b>Reference:</b> <i>Bartlett, Roger. 1997. Introduction to Sports Biomechanics, London: E &amp; FN: Spon, An Imprint of Chapman &amp; Hall</i></p>	0%

6	Able to understand the definitions of Force-Motion, Force-Time, And Inertia	Explain and master the definitions of Force-Motion, Force-Time, and Inertia	<b>Criteria:</b> Active participation  <b>Form of Assessment :</b> Participatory Activities	Lectures, Discussions, Presentations and Questions and Answers 3 X 50		<b>Material:</b> force, moment of inertia <b>Reference:</b> Bartlett, Roger. 1997. <i>Introduction to Sports Biomechanics</i> , London: E & FN: Spon, An Imprint of Chapman & Hall	0%
7	Able to understand the definition of Range of Motion, Balance, Coordination Continuum	Explain and master the definitions of Range of Motion, Balance, Coordination Continuum	<b>Criteria:</b> Active participation  <b>Form of Assessment :</b> Participatory Activities	Lectures, Discussions, Presentations and Questions and Answers 3 X 50		<b>Material:</b> ROM, balance <b>Reader:</b> Carr, Gerry. 1997. <i>Mechanics of sport, A Practioner 19s Guide</i> . America: Human Kinetics.	5%
8	Midterm exam	answer the question correctly	<b>Criteria:</b> Full marks are obtained if you do all the questions correctly  <b>Form of Assessment :</b> Test	3 X 50		<b>Material:</b> biomechanics <b>Bibliography:</b> Bartlett, Roger. 1997. <i>Introduction to Sports Biomechanics</i> , London: E & FN: Spon, An Imprint of Chapman & Hall	30%
9	Able to understand Segmental Interaction, Optimal Projection, And Spin	Explain and master Segmental Interaction, Optimal Projection, And Spin	<b>Criteria:</b> active participation  <b>Form of Assessment :</b> Participatory Activities	Lectures, Discussions, Presentations and Questions and Answers 3 X 50		<b>Material:</b> Segmental Interaction, Optimal Projection, And Spin <b>Library:</b> Carr, Gerry. 1997. <i>Mechanics of sport, A Practioner 19s Guide</i> . America: Human Kinetics.	10%
10	Able to understand Segmental Interaction, Optimal Projection, Spin	Explain and master Segmental Interaction, Optimal Projection, Spin	<b>Criteria:</b> Active participation  <b>Form of Assessment :</b> Participatory Activities	Lectures, Discussions, Presentations and Questions and Answers 3 X 50		<b>Material:</b> Segmental Interaction, Optimal Projection, And Spin <b>Library:</b> Carr, Gerry. 1997. <i>Mechanics of sport, A Practioner 19s Guide</i> . America: Human Kinetics.	5%
11	Able to understand the definition of Speed, Acceleration	Explain and master Speed, Acceleration	<b>Criteria:</b> Active participation  <b>Form of Assessment :</b> Participatory Activities	Lectures, Discussions, Presentations and Questions and Answers 3 X 50		<b>Material:</b> speed, acceleration <b>Reader:</b> Carr, Gerry. 1997. <i>Mechanics of sport, A Practioner 19s Guide</i> . America: Human Kinetics.	5%

12	Able to analyze sports movements using the Kinovea application	Explain and master the Kinovea Application	<b>Criteria:</b> project progress  <b>Forms of Assessment</b> : Participatory Activities, Project Results Assessment / Product Assessment, Practical Assessment	Presentation, Discussion and Questions and Answers 3 X 50		<b>Material:</b> biomechanics <b>Bibliography:</b> <i>Bartlett, Roger. 1997. Introduction to Sports Biomechanics, London: E &amp; FN: Spon, An Imprint of Chapman &amp; Hall</i>	0%
13	Able to understand the motion analysis of walking, running, throwing, jumping	Explain and master the analysis of walking, running, throwing and jumping movements	<b>Criteria:</b> project progress  <b>Forms of Assessment</b> : Participatory Activities, Project Results Assessment / Product Assessment, Practical Assessment	Lectures, Discussions, Presentations and Questions and Answers 3 X 50		<b>Material:</b> biomechanics <b>Bibliography:</b> <i>Carr, Gerry. 1997. Mechanics of sport, A Practioner 19s Guide . America: Human Kinetics.</i>	0%
14	Able to understand the definition of Motion Analysis of Walking, Running, Throwing, Jumping	Explain and master the motion analysis of walking, running, throwing and jumping	<b>Criteria:</b> project progress  <b>Form of Assessment</b> : Participatory Activities	Lectures, Discussions, Presentations and Questions and Answers 3 X 50		<b>Material:</b> biomechanical analysis <b>Bibliography:</b> <i>Carr, Gerry. 1997. Mechanics of sport, A Practioner 19s Guide . America: Human Kinetics.</i>	0%
15	Able to understand the motion analysis of walking, running, throwing, jumping	Explain and master the motion analysis of walking, running, throwing and jumping	<b>Criteria:</b> project progress  <b>Form of Assessment</b> : Participatory Activities	Lectures, Discussions, Presentations and Questions and Answers 3 X 50		<b>Material:</b> biomechanical analysis <b>Bibliography:</b> <i>Carr, Gerry. 1997. Mechanics of sport, A Practioner 19s Guide . America: Human Kinetics.</i>	0%
16	Able to understand the motion analysis of walking, running, throwing, jumping	Explain and master the motion analysis of walking, running, throwing and jumping	<b>Criteria:</b> projects  <b>Forms of Assessment</b> : Participatory Activities, Project Results Assessment / Product Assessment, Tests			<b>Material:</b> biomechanics <b>References:</b> <i>Albernety, Bruce, et.al. 1997. The Biophysical Foundations of Human Movement, Australia: Human Kinetics.</i>  <b>Material:</b> biomechanical analysis <b>Bibliography:</b> <i>Carr, Gerry. 1997. Mechanics of sport, A Practioner 19s Guide . America: Human Kinetics.</i>	40%

#### Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
1.	Participatory Activities	43.33%
2.	Project Results Assessment / Product Assessment	13.33%
3.	Test	43.33%
		99.99%

## Notes

1. **Learning Outcomes of Study Program Graduates (PLO - Study Program)** are the abilities possessed by each Study Program graduate which are the internalization of attitudes, mastery of knowledge and skills according to the level of their study program obtained through the learning process.
2. **The PLO imposed on courses** are several learning outcomes of study program graduates (CPL-Study Program) which are used for the formation/development of a course consisting of aspects of attitude, general skills, special skills and knowledge.
3. **Program Objectives (PO)** are abilities that are specifically described from the PLO assigned to a course, and are specific to the study material or learning materials for that course.
4. **Subject Sub-PO (Sub-PO)** is a capability that is specifically described from the PO that can be measured or observed and is the final ability that is planned at each learning stage, and is specific to the learning material of the course.
5. **Indicators for assessing** ability in the process and student learning outcomes are specific and measurable statements that identify the ability or performance of student learning outcomes accompanied by evidence.
6. **Assessment Criteria** are benchmarks used as a measure or measure of learning achievement in assessments based on predetermined indicators. Assessment criteria are guidelines for assessors so that assessments are consistent and unbiased. Criteria can be quantitative or qualitative.
7. **Forms of assessment:** test and non-test.
8. **Forms of learning:** Lecture, Response, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning.
9. **Learning Methods:** Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning, and other equivalent methods.
10. **Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
11. **The assessment weight** is the percentage of assessment of each sub-PO achievement whose size is proportional to the level of difficulty of achieving that sub-PO, and the total is 100%.
12. TM=Face to face, PT=Structured assignments, BM=Independent study.