

Lesson	Learning Outcomes	The digital resources available on EKB		
		Najwa Limited	Longman(pdf)	Discovery
Rectilinear Motion				
Differentiation of the vector functions	<ul style="list-style-type: none"> Recognize, determine the position vector of any particle on a straight line and find the displacement norm of a particle moving on a straight line during a period of time. Solve problems on the velocity of a particle moving in a straight line. Solve problems on the acceleration vector of a particle after a certain period of time. Solve problems on acceleration when velocity is a function in position/displacement. Determine and interpret the type of motion for a particle (immobile, moving backwards, moving in a steady speed, moving in a default motion a, moving in an accelerating motion). Determine the sign of algebraic measurement for velocities and acceleration through given curves (position-time, displacement-time, speed-time, and acceleration-time). Solve problems on differentiation of vector functions. 	https://lms.ekb.eg/repository/resource/82ed5e8f-77ac-4ac4-a6b6-213f459f1aba/en https://lms.ekb.eg/repository/resource/d75d0061-d71f-4d6e-a570-d63d1775cb8a/en https://lms.ekb.eg/repository/resource/8ac1d0b7-6ae2-4e91-ba62-34e6726ed4f4/en		

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Integration of the vector functions	<ul style="list-style-type: none"> Find the displacement of a particle after a period of time from the start of motion, having its speed given. Find the speed and displacement of a particle after a period of time from the start of motion, having the acceleration of the particle movement given. Find the acceleration of a particle if a is a function in displacement. Solve non-routine problems on the integral vector functions. 	https://lms.ekb.eg/repository/resource/42a5b446-525a-4669-bd9c-078725c33dd3/en		
Newton's laws of motion				
Momentum	<ul style="list-style-type: none"> Recognize the concept of momentum of a particle in a specific moment and its measurement units. Find the change in the momentum of a particle. 	https://lms.ekb.eg/repository/resource/e3f46e1e-9085-4114-bb42-1e66f95ceaa1/en		https://lms.ekb.eg/repository/resource/a5884097-ca3d-4db5-a0b4-203503c925ec/en
Newton's first law	<ul style="list-style-type: none"> o Recognize Newton's first law, and to know the Inertia and solve problems on it. 	https://lms.ekb.eg/repository/resource/5c02f3ca-4aa2-4e8d-90d7-55b112a49479/en		

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Newton's second law	<ul style="list-style-type: none"> Recognize Newton's second law, the relation between force and acceleration, and the units of force, weight, and mass. Solve problems it the motion equation using differentiation. 	https://lms.ekb.eg/repository/resource/7bf5cee5-a8f8-4f53-a150-5538cef79ec0/en https://lms.ekb.eg/repository/resource/d4844936-8a13-45eb-828b-fb507c26f85c/en		
Newton's third laws	<ul style="list-style-type: none"> Recognize and Solve problems on Newton's third law (Pressure and reaction). oSolve non-routine problems on Newton's laws of motion. oApply Newton's laws of motion on real-life situations such as: particle placed in a moving elevator with a regular acceleration (the motion of particles connected with threads or chains). 	https://lms.ekb.eg/repository/resource/49edafd2-ef5e-4e11-9d6d-7b63156e0fbf/en		
Motion of a body on a smooth inclined plane and rough plane	<ul style="list-style-type: none"> o Apply Newton's laws of motion on real-life situations such as: A particle's motion on a smooth inclined plane. A particle's motion on a (horizontal – inclined) rough plane. 	https://lms.ekb.eg/repository/resource/27e56d19-0007-4af5-816e-5844beaafc14/en https://lms.ekb.eg/repository/resource/c5cd07eb-2799-49a2-9503-7d6c79a59163/en		

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Simple pulleys	<ul style="list-style-type: none"> Apply Newton's laws of motion on real-life situations (motion of simple pulleys) such as: The motion of a set of two particles vertically hanging from the two ends of a thread running over a smooth pulley. Apply Newton's laws of motion on real-life situations (motion of simple pulleys) such as: The motion of a set of two particles, one of which moves on a smooth horizontal table and the other moves vertically. The motion of a set of two particles, one of which moves on a rough horizontal table and the other moves vertically. Apply Newton's laws of motion on real-life situations (motion of simple pulleys) such as: The motion of a set of two particles tied to the ends of a thread, one of them moves on a smooth inclined plane and the other moves vertically. The motion of a set of two particles tied to the ends of a thread, one of them moves on a rough inclined plane and the other moves vertically. Solve problems involving the motion of elevators, and smooth and inclined planes. Solve untypical problems on the applications of Newton's laws of motion on a rough plane. 	<p>https://lms.ekb.eg/repository/resource/c9115dd6-9a2e-4993-a649-51ec25051349/en</p> <p>https://lms.ekb.eg/repository/resource/ee8d9781-c9d9-44c6-8a7a-0e3beebac023/en</p> <p>https://lms.ekb.eg/repository/resource/28b1d782-28f4-4150-b57d-ec402a70d45b/en</p>		<p>https://lms.ekb.eg/repository/resource/49c55391-3b46-4fa5-bcb2-c3f9401304fe/en</p>

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impulse and collision				
Impulse	<ul style="list-style-type: none"> Recognize the concept of impulse and measurement units of impulse magnitude, and to find the impulse magnitude. Solve problems on the relation between impulse and momentum. Solve real-life applications on impulse. Solve various problems on impulse and the relation between impulse, the change of momentum and the time of impulse force act. 	https://lms.ekb.eg/repository/resource/38a604dc-8d73-49b1-8828-d722bb90b3cf/en		
collision	<ul style="list-style-type: none"> Recognize and solve problems on elastic collision. Recognize and solve problems on inelastic collision. Solve real-life applications on elastic collision. Solve real-life applications on inelastic collision. Solve various problems on elastic and inelastic collision. 	https://lms.ekb.eg/repository/resource/692762a7-3f41-4f9d-bba8-09de5b01837d/en		

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work, power, and energy				
work	<ul style="list-style-type: none"> Recognize and solve problems on the work exerted by a constant force, and different cases of force and displacement vectors. Recognize and solve problems on the work exerted by a variable force, and work measurement units. Solve various problems on work exerted by a “constant – variable” force. Solve real-life applications on work exerted by a “constant – variable” force. 	https://lms.ekb.eg/repository/resource/f0efb3c3-f36a-4552-be93-4b0998809e79/en https://lms.ekb.eg/repository/resource/718fee34-6344-451c-8431-ef42df6cdb2e/en https://lms.ekb.eg/repository/resource/c291b95a-f027-4a49-99c8-51711ede423f/en		
Kinetic energy	<ul style="list-style-type: none"> Recognize and solve problems on the energy of a particle motion and its measurement units. Solve various problems on kinetic energy. Solve real-life applications on kinetic energy. Recognize and solve problems on the principle of work and energy. Solve non-routine problems on the principle of work and energy. 	https://lms.ekb.eg/repository/resource/0db457df-15c4-4c25-a969-4faf466cb97b/en https://lms.ekb.eg/repository/resource/85495c42-8c25-4afe-9871-07fddac425f5/en https://lms.ekb.eg/repository/resource/247ed264-bcdf-4e38-b784-86b085f24128/en		

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Potential energy	<ul style="list-style-type: none"> Recognize the potential energy and its measurement units. Recognize and solve problems on the relation between work and potential energy variation. Solve problems on relation between kinetic energy and potential energy in case of (free motion “only under the impact of weight”, presence of a resistance”). Solve untypical problems on potential energy. 	https://lms.ekb.eg/repository/resource/0db457df-15c4-4c25-a969-4faf466cb97b/en https://lms.ekb.eg/repository/resource/bd1de31e-55c5-4a29-ad5c-9461928f9aef/en		
Power	<ul style="list-style-type: none"> Recognize and solve problems on the concept of power and its measurement units. Solve problems on power. Solve real-life applications on power. 	https://lms.ekb.eg/repository/resource/1bcfe8e3-3a3e-48cb-8757-880f5245fa57/en https://lms.ekb.eg/repository/resource/6cfa20a9-11a9-4b0b-b15f-901de32d67e1/en		