



UNIVERSITI TEKNOLOGI MARA
SED553: SCIENCE IN EXERCISE AND SPORTS PHYSIOLOGY

Course Name (English)	SCIENCE IN EXERCISE AND SPORTS PHYSIOLOGY APPROVED
Course Code	SED553
MQF Credit	3
Course Description	The purpose of this subject is to demonstrate a working knowledge about energy system and the regulation of energy sources as they relate to exercise. Students will also learn to associate the concepts with actual situation to help them plan, execute, and modify their physical education successfully.
Transferable Skills	Problem-solving, exercise testings, teamwork, collaborative efforts
Teaching Methodologies	Lectures, Web Based Learning, Peer Practice, Collaborative Learning
CLO	CLO1 Use the various processes and energy utilization in the main energy system to perform physical activity successfully. CLO2 Perform the physiological assessments to improve physical activity levels. CLO3 Differentiate the factors which will determine the force output and its influence on physical activity.
Pre-Requisite Courses	No course recommendations
Topics	
1. Energy system 1.1) Immediate energy sources, non-oxidative energy source, oxidative energy source	
2. Exercising muscle 2.1) Structure and function of exercising muscle, metabolism and hormonal control, energy expenditure and fatigue	
3. Cardiorespiratory responses to exercise 3.1) Structure and function of the heart, control of cardiac output and circulation, determinants of blood flow, vascular regulation and control	
4. Muscular function during exercise 4.1) Muscle fiber type in athletes, the sliding filament mechanism of muscle contraction, excitation-contraction coupling	
5. Assessment of physiological capacity of exercise 5.1) VO ₂ max testing, strength testing	
6. Physiological effect of training 6.1) Training for fitness, training for performance	
7. Environment factors which influence performance 7.1) Altitude, temperature	
8. Age and gender consideration in sport and exercise 8.1) Children and adolescent in sport and exercise, aging in sport and exercise, gender differences in sport and exercise	
9. The use of doping substance to enhance physical performance 9.1) Performance enhancing drugs, recreational drugs, blood doping, psychological effects and mechanism of ergogenic aids	

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Video summary (understanding and application of contents in real-world)	5%	CLO3
	Group Project	Work on exercise testing (introduction, procedures, execution, analysis) on different populations.	30%	CLO2
	Individual Project	Create a website on physical activity resources	5%	CLO3
	Presentation	Chapter or exercise physiology related teaching	20%	CLO1

Reading List	Recommended Text	<ul style="list-style-type: none"> • Kenney, W. L., Wilmore, J. H., & David, L. C. 2015, <i>Physiology of sport and exercise</i>, 6 Ed. • W. Larry Kenney, Jack H. Wilmore, David Costill 2019, <i>Physiology of Sport and Exercise</i>, 7 Ed., Human Kinetics Publishers Champaign IL [ISBN: 9781492574866] • Jay Hoffman 2002, <i>Physiological Aspects of Sport Training and Performance</i>, 2 Ed., Human Kinetics Champaign IL [ISBN: 978149257814]
	Reference Book Resources	<ul style="list-style-type: none"> • Robert M. Malina, Claude Bouchard, Oded Bar-Or 2004, <i>Growth, Maturation, and Physical Activity</i>, 2 Ed., Human Kinetics Champaign IL [ISBN: 9780880118828] • Sharkey, B. J., & Gaskill, S. E. 2013, <i>Fitness & Health</i>, 7 Ed., Human Kinetics Champaign IL [ISBN: 9781450441803] • Alan L. Smith, Stuart Biddle 2008, <i>Youth Physical Activity and Sedentary Behavior</i>, Human Kinetics Champaign IL [ISBN: 9780736065092]

Article/Paper List	This Course does not have any article/paper resources
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Other References	This Course does not have any other resources
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