國立體育大學授課教學大綱（Teaching Plan）

科目中文名稱 Chinese Course Title	運動生理學研究
科目英文名稱 English Course Title	Advanced Exercise Physiology
授課老師 Instructor	Jackson Pui Man Wai 衛沛文
修課條件 Prerequisite	Undergraduate level courses in anatomy, human physiology, and exercise physiology are required. Students with deficiency in prerequisite courses are required to obtain permission from the course instructor.
教學目標 Objective	At the end of this semester, student will be able to understand the important role of physical activity/exercise and obesity on human health and its application in control of non-communicable diseases.
先修科目 Pre Course	“ see prerequisite”
教材內容 Outline	**Physical activity and inactivity:** Definition of physical activity, domain of physical activity (leisure, domestic, work-related, transportation), assessment of physical activity (survey, heart rate monitor, pedometer, accelerometer). **Physical activity and Health:** Prevalence of physical activity, physical activity and disease prevention, management (cardiovascular disease, hypertension, obesity, metabolic syndrome, cancer, diabetes, chronic obstructive pulmonary disease, osteoporosis, functional disability), and mortality. **Guidelines of physical activity:** Evolution of the physical activity guidelines, current guideline of physical activity –WHO, USCDC, Asian countries, and Taiwan. **Human energy expenditure:** Direct measurement of energy expenditure (metabolic chamber, open-circuit respiratory, double-labeled water), resting (basal) metabolic rate, sleep metabolic rate, thermic effect food, physical activity energy expenditure, excess post-exercise oxygen uptake, total daily energy expenditure, physical activity level (PAL). **Definition of obesity:** Height-weight table, body mass index, waist circumference, waist-hip ratio, body composition (fat-free mass, fat mass) **Epidemiology of overweight and obesity:** Global, United States, Asian countries, and Taiwan. **The health problems of overweight and obesity:** Mortality, morbidity, and comorbidity of overweight and obesity, cardiovascular disease, type 2 diabetics, gall-bladder disease, osteoarthritis, cancers. **Assessment of overweight and obesity:** Anthropometry (skinfolds, circumferences), body composition analysis (densitometry, bioimpedance). **Physical activity and obesity:** Epidemiology evidence, exercise intervention

	on change of body weight, body composition, adipose tissue and visceral fat.
教學方式 Teaching Method	Classroom instructions and discussions
參考書目 References	**References:** 1. **Bouchard C**. *Physical Activity and Obesity*. Champaign, IL: Human Kinetics, 2000. 2. **Bray GA and Bouchard C.** *Handbook of obesity: Clinical applications*. New York: Marcel Dekker, 2004. 3. **Bray GA and Bouchard C.** *Handbook of obesity: Etiology and pathophysiology*. New York: Marcel Dekker, 2004. 4. **Chi Pang Wen, Jackson Pui Man Wai, Min Kuang Tsai, Yi Chan Yang, Ting Yuan, David Cheng, Meng-Chih Lee, Hui Ting Chan, Chwen Keng Tsao, Shan Pou Tsai, Xifeng Wu.** Minimum amount of physical activity for reduced mortality: a prospective cohort study. *The Lancet*. Published online (www.thelancet.com) August 16, 2011 DOI:10.1016/S0140- 6736(11)60749-6. *****These authors shared first authorship. [2010 SCI impact factor 33.633] 5. **Chi-Pang Wen, Hui-Ting Chan, Min-Kuang Tsai, Ting-Yuan D Cheng, Wen-Shen I Chung, Yen-Chen Chang, Hui-Ling, Hsu, Shan-Pou Tsai, Chwen-Keng Tsao, Jackson Pui Man Wai and Chih-Cheng Hsu.** Attributable mortality burden of metabolic syndrome : comparison with its individual components. *European Journal of Cardiovascular Prevention & Rehabilitation.* August 2011 18: 561-573, first published on March 4, 2011 doi:10.1177 /1741826710389422. 6. **Chi-Pang Wen, Jackson Pui-Man Wai, Hui-Ting Chan, Yi-Chen Chan, Po-Hwang Chiang, and Ting-Yuan Cheng**. Evaluating the physical activity policy in Taiwan: comparison of the prevalence of physical activity between Taiwan and the U.S. *Taiwan Journal of Public Health.* 26(5): 386-399, 2007 7. **Deurenberg P, Yap MD, Wang J, Lin FP, and Schmidt G.** The impact of body build on the relationship between body mass index and percent body fat. *Internal J Obesity* 23:537-542, 1999. 8. **Durstine JL and Moore GE**. *ACSM's Exercise Management for Persons with Chronic Diseases and Disabilities.* Human Kinetics, 2003. 9. **Eckel RH.** *Obesity: Mechanisms and Clinical Management.* Philadelphia, PA: LWW, 2003. 10. **Heywood VA.** *Advanced Fitness Assessment and Exercise Prescription, 4th ed*. Champaign, IL: Human Kinetics, 2002. 11. **Jackson AS, Blair SN, Mahar MT, Wier LT, Ross RM, and Stuteville JE**. Prediction of functional aerobic capacity without exercise testing. *Med. Sci. Sports Exerc*. 22(6): 863-870, 1990. 12. **Katzmarzky PT, Gagnon J, Leon AS, Skinner JS, Wilmore JH, Rao DC, and Bouchard C.** Fitness, fatness, and estimated coronary heart disease risk: the HERITAGE Family Study. *Med Sci Sports Exerc* 33(4): 585-590, 2001. 13. **Lee I-M, Blair S, Manson J, and Paffenbarger RS**. Epidemiologic Methods in Physical Activity Studies. Oxford University Press 2009. 14. **Yu-Chen Lin, Chi-Pang Wen, Jackson Pui-Man Wai**. Leisure-time physical activity and its association with health behaviors, health status and health-related quality of life among Taiwanese adults. *Taiwan Journal of Public Health*. 26(3): 218-228, 2007.
教學進度 Syllabi	請詳載 18 週授課內容 (Teaching contents in 18 weeks) Week 1-3: Physical activity and inactivity Week 4-6: Physical activity and Health Week 7: Guidelines of physical activity Week 8-9 Human energy expenditure Week 10: Mid-term examination Week 11: Definition of obesity Week 12-13: Epidemiology of overweight and obesity

	Week 14-15: The health problems of overweight and obesity Week 16-17: Assessment of overweight and obesity, physical activity and obesity Week 18: Final examination, term paper.
評量方式 Evaluation	評量方式與百分比（Method and percentage） Mid-term examination (written test) (30%) Final examination (written test) (40%) Term paper (30%)

注意事項：

1.課程之中英文名稱請依各開課單位學分科目表填寫。

2.本表各欄位如有不足，請自行增列後填寫。

Core Ability Rubric

Core ability	%	Course objectives	Level of skill	Teaching strategy	Evaluation method
1. 具備運用運動生理、運動營養與運動科技知識的能力	50	▪ Demonstrate understandings and application of the context of course material	Academic skill	▪ Classroom instructions ▪ Stimulation of thinking	▪ Term paper ▪ Written examination
2. 具備分析與解決運動科學相關問題的能力	30	▪ Can identify problem types. ▪ Understands the level of complexity of a problem ▪ Develop, evaluate, and test possible solutions	Analytical skill	▪ Classroom instructions ▪ Encourage critical thinking ▪ Guiding writing skills	▪ Written examination ▪ Term paper
3. 具備運動科學專業文獻 (含外語) 之閱讀、寫作及發表 (含外語) 的能力	20	▪ Able to search, identify, screen, and implement research literatures ▪ Able to write a concise and comprehensible term paper	Integrative skill	▪ Classroom instructions ▪ Instructions on effective writing	▪ Term paper
4. 具備運動科學研究之團隊合作與溝通能力	0				
5.具備運動科學國際觀	0				

Term Paper Rubric (30% of course evaluation)

Criteria	Poor 1-4	Average 5-6	Good 7-8	Excellence 9-10	Score
Ideas (20%)	▪ Does not have a clear central idea or does not respond appropriately to the assignment. ▪ Too vague or obvious to be developed effectively ▪ May misunderstand sources	▪ Adequate but weaker and less effective, responding less well to the assignment. ▪ Presents central idea in general terms, often depending on platitudes or cliches. ▪ Usually does not acknowledge other views. ▪ Shows basic comprehension of sources, with lapses in understanding	▪ Responding appropriately to assignment ▪ Clearly states a central idea, have minor lapses in development. ▪ Begins to acknowledge the complexity of central idea and the possibility of other points of view. ▪ Shows careful reading of sources, but may not evaluate them critically.	▪ Excels in responding to assignment ▪ Demonstrates sophistication of thought ▪ Central idea is clearly communicated and worth developing ▪ Recognizes some complexity, knowledge contradictions, or limits ▪ Understands and critically evaluates its sources	
Organization & coherence (30%)	▪ Lacking internal paragraph coherence and using few or inappropriate transitions ▪ Paragraphs lack topic sentences or main ideas, or too general or too specific to be effective ▪ Paragraphs not all relate to paper's theme	▪ Ideas are arranged with some evident logical structure ▪ May use transitions, but they may not logic-based ▪ Paragraph may relate to central idea, but logic is not always clear ▪ Topic sentences may be overly general, and sentence arrangement may lack coherence	▪ Shows a logical progression of ideas and uses fairly sophisticated transitional devices; e.g., may move from least to more important idea ▪ Some logical links may be faulty, but each paragraph clearly relates to paper's central idea.	▪ Uses a logical structure appropriate to paper's subject, purpose, audience, thesis, and disciplinary field. ▪ Sophisticated transitional sentences often develop one idea from the previous one or identify their logical relations ▪ It guides the reader through the chain of reasoning or progression of ideas.	
Support (30%)	▪ Depends on cliches or overgeneralizations for support, or offers little evidence of any kind. ▪ Personal narrative rather than essay, or summary rather than analysis.	▪ Often uses generalizations to support its points. May use examples, but they may be obvious or not relevant. ▪ Often depends on unsupported opinion or personal experience, or assumes that evidence speaks for itself and needs no application to the point being discussed.	▪ Begins to offer reasons to support its points, perhaps using varied kinds of evidence ▪ Begins to interpret the evidence and explain connections between evidence and main ideas. ▪ Its examples bear some relevance.	▪ Uses evidence appropriately and effectively, providing sufficient evidence and explanation to convince.	
Style and mechanics (20%)	▪ Vague and abstract, or too personal and specific ▪ Usually contains awkward or ungrammatical sentences; sentence structure is simple or monotonous ▪ Contains either many mechanical errors or a few important errors that may impede the reader's understanding and ability to see connections between thoughts	▪ Relatively vague and general words, may use some inappropriate language ▪ Sentence structure generally correct, but sentences may be wordy, unfocused, repetitive, or confusing ▪ Usually contains several mechanical errors, which may temporarily confuse the reader but not impede the overall understanding	▪ Generally uses words accurately and effectively, but may sometimes be too general ▪ Sentences generally clear, well structured, and focused, though some may be awkward or ineffective ▪ Contain a few errors, which may confuse the reader but not impede understanding	▪ Chooses words for their precise meaning and uses an appropriate level of specificity ▪ Sentence style fits paper's audience and purpose ▪ Sentences are varied, yet clearly, carefully focused, not long and rambling ▪ Almost entirely free of spelling, punctuation, and grammatical errors.	
				Total (max. 100)	