

**SPORT SCIENCE & MANAGEMENT**  
**SS3329 THEORIES AND PRACTICE IN STRENGTH AND CONDITIONING**

<b>Academic Year</b>	2025-26	<b>Semester</b>	1
<b>Course Coordinator</b>			
<b>Course Code</b>	SS3329		
<b>Course Title</b>	Theories and Practice in Strength and Conditioning		
<b>Pre-requisites</b>	-		
<b>No of AUs</b>	3		
<b>Contact Hours</b>	39		

**Course Aims**

This course aims to provide you with theoretical and practical knowledge of designing and delivering strength and conditioning training. The course will bring together four key areas, namely functional anatomy, adaptations and principles, planning and design, and practical implementation of various strength and conditioning practices. In addition, you will be taught key concepts such as periodisation, physiological adaptations to various training methods, test selection and administration, and delivery of strength and conditioning programmes.

**Intended Learning Outcomes (ILO)**

By the end of this course, you should be able to:

1. differentiate the various muscle and physiological systems associated with various training methods.
2. discuss the neuromuscular, age- and sex-related differences in training adaptations.
3. select, administer, and interpret various testing protocols to assess physical performance.
4. design and confidently deliver strength and conditioning programmes to improve physical performance.

**Course Content**

The following topics will be covered:

1. Overview of concepts relating to strength and conditioning.
2. Functional anatomy and physiology relating to exercise.
3. Neuromuscular, age and sex-related differences in exercise adaptations.
4. Assessments of the neuromuscular system.
5. Theoretical approach to planning and design of strength and conditioning training.
6. Practical delivery and considerations to strength and conditioning training.

## NTU Competencies & Graduate Attributes

### NTU Competencies

Character	√
Competence	√
Cognitive agility	√

### NTU Graduate Attributes

Graduate Attributes	Level (i.e., basic, intermediate, advanced)
1. Decision Making	Advanced
2. Critical Thinking	Advanced
3. Project Management	Intermediate
4. Collaboration	Intermediate

## Assessment (includes both continuous and summative assessment)

Component	ILO Tested	Weighting	Team/ Individual	Assessment Rubrics
1. Quiz	1-2	20%	Individual	
2. Video Presentation	1-4	40%	Team	Appendix 1
3. Final Examination	1-4	40%	Individual	
Total		100%		

## Formative Feedback

Feedback for learning will be in verbal form. Group and individual-level feedback on the quiz and video presentation will be provided. For the exam, general feedback on common mistakes will be provided. For the video presentation, you will receive verbal feedback on the training strategies, physical assessments, and practical considerations useful for designing strength and conditioning training.

## Learning and Teaching Approach

Approach	How does this approach support you in achieving the learning outcomes?
Lectures	Lectures will provide information on key learning concepts and theories and support understanding how they may be applied in the real world.
Online Learning	Time will be given for learning from online materials as a part of the flip teaching approach. These materials will support key concepts covered in lectures, tutorials, and practical sessions.
Laboratories	You will gain exposure to the resistance training room and techniques

	used to assess physical performance. Practical classes will also provide study opportunities to create their own practice of strength and conditioning concepts. The lecturer will provide feedback and information to facilitate your learning of the design and implementation of a strength and conditioning programme.
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## Reading and References

### NIE Research and Publications

1. Latella, C., Goodwill, A.M., Muthalib, M., Hendy, A.M., Major, B., Nosaka, K., & **Teo, W.P.** (2019). Effects of eccentric versus concentric contractions of the biceps brachii on intracortical inhibition and facilitation. *Scandinavian Journal of Medicine & Science in Sports*, 29(3), 369-379.
2. **Teo, W.P.**, McGuigan, M.R., & Newton, M.J. (2011). The effects of circadian rhythmicity of salivary cortisol and testosterone on maximal isometric force, maximal dynamic force, and power output. *Journal of Strength and Conditioning Research*, 25(null), 1538-1545.
3. **Teo, W.P.**, Newton, M.J., & McGuigan, M.R. (2011). Circadian rhythm in exercise performance: Implications for hormonal and muscular adaptation. *Journal of Sports Science and Medicine*, 10(null), 600-606.

### Other Readings and References

4. Haff, G.G., & Triplett, T. (2016). *Essentials of Strength Training and Conditioning*. (4<sup>th</sup> Ed.). Champaign, IL: Human Kinetics

Additional readings will be posted in NTULearn.

## Course Policies and Student Responsibilities

### (1) General

You are expected to complete all assigned pre-class readings and activities, attend all classes – lecture and laboratory – punctually, submit all scheduled assignments and take tests by due dates. You are not allowed to swap laboratory groups without express permission from the course coordinator. You are expected to take responsibility to follow up with course notes, assignments and course related announcements for sessions they have missed. You are expected to participate in all discussions and class activities unless there is a valid medical reason not to do so.

### (2) Absenteeism

Absence from class without a valid reason will affect your overall course grade. Valid reasons include falling sick, supported by a medical certificate and participation in NTU's approved activities supported by an excuse letter from the relevant bodies.

If you miss a lecture, you must inform the course instructor via email prior to the start of the class.

### (3) Absence Due to Medical or Other Reasons

If you are sick and not able to complete a test or submit an assignment, you have to submit the original Medical Certificate (or another relevant document) to the Sport Science & Management (or Home School) administration to obtain official leave. Without this, the missed assessment component will not be counted towards the final grade. There are no make-ups allowed.

### (4) Attire and safety

You are expected to participate in practical laboratory activities. Some of these activities involve exercise. You are expected to wear appropriate attire for participation, obey laboratory safety rules, and take appropriate care of and return all equipment after use.

## Academic Integrity

Good academic work depends on honesty and ethical behaviour. The quality of your work as a student relies on adhering to the principles of academic integrity and to the NTU Honour Code, a set of values shared by the whole university community. Truth, Trust and Justice are at the core of NTU's shared values.

As a student, it is important that you recognise your responsibilities in understanding and applying the principles of academic integrity in all the work you do at NTU. Not knowing what is involved in maintaining academic integrity does not excuse academic dishonesty. You need to actively equip yourself with strategies to avoid all forms of academic dishonesty, including plagiarism, academic fraud, collusion, and cheating. If you are uncertain of the definitions of any of these terms, you should go to the [NTU Student Academic Integrity Policy and Procedures link](#) in the Student Portal for more information. Consult your instructor(s) if you need any clarification about the requirements of academic integrity in the course.

Special note: Generative AI tools will be allowed to the extent stipulated for each assignment in the assignment instructions, and any such use must be duly referenced or disclosed.

## Course Instructors

Instructor	Office Location	Phone	Email
TBA			

## Planned Weekly Schedule

Week	Topic	ILO	Readings/ Activities
1	Functional structures and bodily systems I	1	Haff & Triplett (2016). Chap 1
2	Functional structures and bodily systems II	1	Haff & Triplett (2016). Chap 1
3	Functional structures and bodily systems III	1	Haff & Triplett (2016). Chap 1
4	Adaptations to resistance training	1, 2	Haff & Triplett (2016). Chap 4
5	Adaptations to anaerobic training	1, 2	Haff & Triplett (2016). Chap 5

6	Adaptations to aerobic training	1, 2	Haff & Triplett (2016). Chap 6
7	Age and sex differences in resistance training	1, 2	Haff & Triplett (2016). Chap 7
Recess Week			
8	Assessing physical performance	1, 3	Haff & Triplett (2016). Chap 12 and 13
9	Programming for resistance and plyometric training	1, 4	Haff & Triplett (2016). Chap 17 and 18
10	Programming for speed and agility	1, 4	Haff & Triplett (2016). Chap 19
11	Programming for aerobic endurance	1, 4	Haff & Triplett (2016). Chap 20
12	Periodisation	1, 4	Haff & Triplett (2016). Chap 21
13	Revision		

### Appendix 1: Assessment Criteria for Video Presentation (40%)

	A+, A, A-	B+, B	B-, C+, C	D+, D	F
<b>Quality of Content (max 20)</b>	Information provided clearly answers the question set out. Presentation is clear and the flow is coherent and logical.	Information mostly answers the question set. Presentation is mostly clear and the flow generally coherent and logical.	There are weaknesses or absences in the information provided, and the flow of presentation is unclear at times.	Much of the information provided does not answer the question, and the flow is difficult to understand.	Little relevant information and unclear flow.
<b>Use of Theories &amp; Concepts (max 30)</b>	Excellent application of theories and concepts and very clear explanation of processes associated with motor control and motor learning.	Good application of theories and concepts and mostly clear explanation of processes associated with motor control and motor learning.	Average application of theories and concepts and, at times, unclear explanation of processes associated with motor control and motor learning.	Poor application of theories and concepts, and it is difficult to understand the explanation of processes associated with motor control and motor learning.	No application of theories and concepts to explain the processes of motor control and motor learning.
<b>Quality of Visual &amp; Audio Media (max 20)</b>  Clarity refers to clarity of speech narration and clarity of video quality and/or views that are in line with your narration.	Visual and audio media are very clear	Visual and audio media are mostly clear	Visual and audio media are unclear at times	Visual and audio media are unclear most of the time	No visual or audio media
<b>Communication and teamwork* (max 20)</b>	Communication is very clear and easy to understand. All members	Communication is clear and easy to understand most of the time. Most	Communication is unclear at times. Varied contributions of different	Communication is unclear and difficult to understand most of the	Communication is unclear and impossible to understand. No team

	of the team make active contributions .	members of the team make good contributions .	team members.	time. Most contributions provided by a single team member.	member makes an active contribution.
<p>*All individuals within the group are expected to contribute to work involved in the planning, data collection and output. An individual's score may vary from that of the team based on feedback and observations in this area.</p>					

For the peer evaluation component, group members within each group will be asked to rate each of their peers, and the score received for each group member will be the average of the scores from their peers' round to the nearest integer (e.g., student gets a score of 9, 8 and 8, respectively from the 3 other group members and will receive a score of 8 (average of 8.3). These peer evaluation scores do not directly translate to the overall grade category (e.g. a score of 10 ≠ A+), they will be factored into the overall video presentation grade.

<b>Marks</b>	10, 9	8, 7	6, 5	4, 3	2, 1
<b>Peer Evaluation (max 10)</b>	Excellent work; was a crucial component of the group's success	Very strong work; contributed significantly to the group	Sufficient effort; contributed to the group	Insufficient effort; met minimal standards of the group	Little or weak effort; was detrimental to the group