



STRENGTH SPORTS

(Athletics)

Syllabus

Requisites of the discipline

Cycle of Higher Education	<i>First (bachelor's)</i>
Branch of knowledge	<i>All</i>
Specialty	<i>All specialties</i>
Educational program	<i>All</i>
Course status	<i>Optionally discipline</i>
Mode of study	<i>Full-time</i>
Year of study/Semester	<i>2d year (autumn /spring semesters)</i>
ECTS workload	<i>2 ECTS credits / 60 hours</i>
Testing and Assessment	<i>Final Test, Module Test , Homework</i>
Course schedule	<i>According to the schedule on the site http://rozklad.kpi.ua/</i>
Language of instruction	<i>English</i>
Information about course supervisor / teachers	<i>Practical: Associate Professor of Department of Health and Sports Technologies, Candidate of Pedagogical Sciences Olena Tverdokhlib PhD, e-mail – elleo2208@gmail.com</i>
Course placement	<i>Platform «Sikorsky» https://do.ipk.kpi.ua/course/view.php?id=2624</i>

Hours distribution

Semester	Lectures	Practical	Laboratory	Self-study
<i>Autumn /Spring semester</i>	-	36	-	24

Curriculum of the discipline

1. Course description, goals, objectives, and learning outcomes

The Course " Strength sports (athletics)" is designed for 2-d year bachelors.

The discipline acquaints students with the standards of Strength sports (athletics)

The discipline:

- Primary focus on the physical training, integral body training and weight training experience;*
- Through a diverse range of physical training experiences to provide regular, challenging physical activity, to balance and harmonize psychosomatic condition, to develop general well-being;*
- To develop a desire for daily physical activity and encourages constructive use of free time and participation in physical activities in adult life.*

The practical part is aimed at solving problems of analysis of information sources, understanding of the terminological basis of physical education, sports, medicine and biology, technologies and methods of preparation of scientific reports, articles, presentations.

The syllabus is constructed in such a way that to perform each subsequent task, students need to apply the skills and knowledge acquired in the previous one. The final task is to pass test for which students apply

theoretical knowledge and practical skills. Particular attention is paid to the principle of gradual application of physical activity, self-control of the psychosomatic state.

The classes introduce a system of encouraging students to active learning, in accordance with which they must work on practical thematic tasks that will further solve problems with physical development and motor skills.

Teaching of the discipline is based on:

- Strategies of active and collective learning, teacher-student interaction in order for students to master the material and develop their practical skills.

- Personality-oriented developmental technologies based on active forms and methods of teaching (selection of individual workload).

For interaction with students the modern information-communication and network technologies are used for communication and solving current issues

The main purpose of the discipline motivation to develop the basic vital professional-applied motor skills by different types and forms of physical activity, to maintain healthy lifestyle (ZK12)

After mastering the discipline, students must demonstrate the following learning outcomes:

2. Prerequisites and post requisites of the course (place in the structural and logical scheme of education according to the relevant educational program)

The discipline "Strength sports (athletics)" is a normative discipline and has an interdisciplinary nature. The discipline integrates according to its subject, the basic characteristics and definitions of other educational and scientific fields of the profession: Biomechanics, Biophysics, Anatomy and Physiology. According to the structural and logical scheme of the bachelor's program is closely related to other disciplines of the professional unit.

3. Course Overview

The main sections and topics that will be considered in the process of studying the course:

Topic 1. Information support for athletics classes, safety. The motor activity effects on the human body.

Topic 2. Physical and fitness condition assessment and analysis. Human's locomotors system. Principles and types of motor activity

Topic 3. Strength training for fitness improving

Topic 4. Strength exercises technique and strength development methods

Topic 5. Strength level monitoring and assessing

Topic 6. Strength training for the harmonious development of physical qualities

Topic 7. Testing the level of physical fitness

4. Coursebooks and teaching resources

Basic:

- 1. Bartlett, R. Introduction to Sports Biomechanics / R. Bartlett. – Taylor & Francis e-Library, 2002. – 287 p..*
- 2. Biomechanics: Principles, Trends and Applications / Editor J. H. Levy. – New York: Nova Science Publishers, Inc., 2010. - 402 p.*
- 3. Brooks GA, Fahey TD, White TP (1996). Exercise Physiology: Human Bioenergetics and Its Applications. Mayfield Publishing Co. ISBN 9780072556421.*
- 4. Brown, R.D., Harrison J.M. The effects of a strength training program on the strength and self-concept of two female age groups/ R.D. Brown, J.M. Harrison // Research Quarterly for Exercise and Sport. – 1986. - Vol. 57, 4. - P. 315-320.*

5. Cash T (2008). *The Body Image Workbook: An Eight-Step Program for Learning to Like Your Looks*. Oakland, CA: New Harbinger Publications. p. 179. ISBN 9781608826179.
6. Feigenbaum MS, Pollock ML (1997). "Strength Training. Rationale for Current Guidelines for Adult Fitness Programs". *The Physician and Sportsmedicine*. 25 (2): 44–63. doi:10.3810/psm.1997.02.1137. PMID 20086885.
7. Hoffman, S. J. *Introduction to Kinesiology / Shirl J. Hoffman*. - 3 ed. - Human Kinetics, 2008. ISBN 9780736076135.
8. *Human Anatomy and Physiology / Elaine N. Marieb, Katja Hoehn*. - 7 ed. - Published by Benjamin Cummings, 2006. ISBN 10: 0805359095.
9. Klika B, Jordan C (2013). "High-Intensity Circuit Training Using Body Weight: Maximum Results With Minimal Investment". *ACSM's Health & Fitness Journal*. 17 (3): 8–13. doi:10.1249/fit.0b013e31828cb1e8.
10. Knab AM, Shanely RA, Corbin KD, et al. (2011). "A 45-Minute Vigorous Exercise Bout Increases Metabolic Rate for 14 Hours" (PDF). *Medicine & Science in Sports & Exercise*. 43 (9): 1643–48. doi:10.1249/mss.0b013e3182118891. PMID 21311363.
11. Knaster, M. *Discovering the Body's Wisdom: A Comprehensive Guide to More Than Fifty Mind-Body Practices*. - Publisher: Bantam, 1996. ISBN 9780307575500.
12. Knaster, M. *Discovering the Body's Wisdom: A Comprehensive Guide to More Than Fifty Mind-Body Practices*. - Publisher: Bantam, 1996. ISBN 9780307575500.
13. Knuttgen HG (2003). "What is exercise? A primer for practitioners". *The Physician and Sportsmedicine*. 31 (3): 31–49. doi:10.1080/00913847.2003.11440567. PMID 20086460.
14. Kraemer WJ (2003). "Strength training basics: Designing workouts to meet patients' goals". *The Physician and Sportsmedicine*. 31 (8): 39–45. doi:10.3810/psm.2003.08.457. PMID 20086485.
15. Myers, Thomas W. *Anatomy Trains: Myofascial Meridians for Manual and Movement Therapists*. - Elsevier Health Sciences, 2001. ISBN 978-0-443-06351-0.
16. *Oxford Handbook of Complementary Medicine / Ernst, Edzard; Pittler, Max H; Wider, Barbara; Boddy, Kate*. – Publisher: Oxford University Press, 2008. ISBN 9780199206773.
17. Pedersen BK (2013). "Muscle as a Secretory Organ". *Comprehensive Physiology*. 3 (3): 1337–62. doi:10.1002/cphy.c120033. ISBN 9780470650714. PMID 23897689.
18. Phillips N (1997). "Essentials of Strength Training and Conditioning". *Physiotherapy*. 83 (1): 47. doi:10.1016/s0031-9406(05)66120-2.
19. Rhea MR, Phillips WT, Burkett LN, et al. (2003). "A Comparison of Linear and Daily Undulating Periodized Programs with Equated Volume and Intensity for Local Muscular Endurance". *The Journal of Strength and Conditioning Research*. 17 (1): 82–7. doi:10.1519/1533-4287(2003)017<0082:acolad>2.0.co;2. PMID 12580661.
20. Rønnestad BR, Egeland W, Kvamme NH, et al. (2007). "Dissimilar effects of one- and three-set strength training on strength and muscle mass gains in upper and lower body in untrained subjects". *Journal of Strength and Conditioning Research*. 21 (1): 157–63. doi:10.1519/00124278-200702000-00028. PMID 17313291.
21. Rushall, B.S., Pyke, F.S. *Training for Sports and Fitness*. - Melbourne, Australia: Macmillan Co of Australia, 1991. - 350 p. ISBN-10: 0732901898.
22. Salmon P (2001). "Effects of physical exercise on anxiety, depression, and sensitivity to stress". *Clinical Psychology Review*. 21 (1): 33–61. doi:10.1016/S0272-7358(99)00032-X. PMID 11148895.
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24. Schwarzenegger, A. (1999). *The New Encyclopedia of Modern Bodybuilding*. Fireside, NY: Simon & Schuster. ISBN 0684857219.

25. Shaw I, Shaw BS (2014). "Resistance Training and the Prevention of Sports Injuries". In Hopkins G (ed.). *Sports Injuries: Prevention, Management and Risk Factors*. Hauppauge, NY: Nova Science Publishers. ISBN 9781634633055.
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27. Weider, J. *The Weider System. What is it?* / J. Weider. // *Muscle & Fitness*. 1987. V.48. P.17 – 71.
28. Твердохліб О.Ф. Біологічні основи атлетичної гімнастики для початківців [Електронний ресурс] : методичні рекомендації для студентів навчального відділення атлетичної гімнастики / КПІ ім. Ігоря Сікорського ; уклад. О. Ф. Твердохліб ; відп. ред. А. Л. Бойко. – Електронні текстові данні (1 файл: 950,91 Кбайт). – Київ : КПІ ім. Ігоря Сікорського, 2017. – 30 с. – Назва з екрана. URI (Уніфікований ідентифікатор ресурсу): <https://ela.kpi.ua/handle/123456789/19250>
29. Твердохліб О.Ф. Фізичне виховання. Атлетична гімнастика для початківців (м'язи спини) [Електронний ресурс] : методичні рекомендації для самостійної роботи студентів / КПІ ім. Ігоря Сікорського ; уклад. О. Ф. Твердохліб, М. Г. Масалкін, Ю. О. Мартинов. – Електронні текстові данні (1 файл: 2,67 Мбайт). – Київ : КПІ ім. Ігоря Сікорського, 2017. – 43 с. – Назва з екрана. URI (Уніфікований ідентифікатор ресурсу): <https://ela.kpi.ua/handle/123456789/20607>
30. Твердохліб О.Ф. Фізичне виховання. Атлетична гімнастика для початківців (м'язи верхніх кінцівок) [Електронний ресурс] : методичні рекомендації для самостійної роботи студентів / КПІ ім. Ігоря Сікорського ; О. Ф.Твердохліб, А. І. Соболенко, М. М. Корюкаєв. – Електронні текстові данні (1 файл: 1,47 Мбайт). – Київ: КПІ ім. Ігоря Сікорського, 2017. – 36 с. – Назва з екрана. URI (Уніфікований ідентифікатор ресурсу): <https://ela.kpi.ua/handle/123456789/20606>

Supplementary:

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3. Campos GE, Luecke TJ, Wendeln HK, et al. (2002). "Muscular adaptations in response to three different resistance-training regimens: Specificity of repetition maximum training zones". *European Journal of Applied Physiology*. 88 (1–2): 50–60.
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5. Sell A, Cosmides L, Tooby J, et al. (2009). "Human adaptations for the visual assessment of strength and fighting ability from the body and face". *Proceedings of the Royal Society of London B: Biological Sciences*. 276 (1656): 575–584. doi:10.1098/rspb.2008.1177. PMC 2664345. PMID 18945661.
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7. Shaw BS, Shaw I (2009). "Compatibility of concurrent aerobic and resistance training on maximal aerobic capacity in sedentary males". *Cardiovascular Journal of Africa*. 20 (2): 104–06. PMC 3721256. PMID 19421643. https://ela.kpi.ua/bitstream/123456789/20606/1/metod_rekomend_ruky.pdf

5. Methods of mastering the discipline (educational component)

Practical work 1

1. *Safety guidelines board of strength training.*
2. *Principles of athletics (bodybuilding, power lifting, weight training).*

Practical work 2

1. *Human Muscular System.*
2. *Types of Physical Activity (cardio, stretching, strength, speed, etc.)*

Practical work 3

1. *The History of Bodybuilding*
2. *Exercises with dumbbells*

Practical work 4

1. *Basic of the Strength.*
2. *The Pull-Ups.*

Practical work 5

1. *Basic of how muscles work.*
2. *Exercises with barbell.*

Practical work 6

1. *Functional tests (self-control).*
2. *Exercises with machines.*

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Practical work 7

1. *Chest muscles anatomy and development.*
2. *Chest workout exercises for building muscles.*

Practical work 8

1. *Back muscles anatomy and development.*
2. *Back workout exercises for building muscles.*

Practical work 9

1. *Leg muscles anatomy and development.*
2. *Leg workout exercises for building muscles.*

Practical work 10

1. *Abdominal muscles anatomy and development.*
2. *How to strength core muscles. The Plank.*

Practical work 12

1. *Shoulder muscles anatomy and development.*
2. *Shoulder workout exercises for building muscles.*

Practical work 13

1. *Arm muscles anatomy and development.*
2. *Arm workout exercises for building muscles.*

Practical work 14

1. *Basic of the Speed.*
2. *The exercises for the development of Trapezius and Deltoid muscles.*

Practical work 15

- 1. Basic of the Endurance.*
- 2. Exercises for the development of Biceps and Triceps muscles.*

Practical work 16

- 1. Basic of Physical Qualities.*
- 2. Development of Physical Qualities.*

Practical work 17

Modular control work

Practical work 18

Credit grade

6. Independent student work

Preparation for practical classes, express-questionnaires and tests on physical fitness, modular control work

Policy and control

7. Attendance policy

Rules for attending classes: students who are late for classes are not allowed; students are admitted to classes if they have sportswear and sports shoes, and a certificate of their medical condition for health reasons.

Rules of conduct in the classroom: turn off the phones, comply with safety requirements.

Rules for the protection of individual tasks: adherence to the principle of academic integrity

Rules for assigning incentive points: incentive points are accrued for participation in competitions, sports and health activities according to the plan of the department, faculty, university (5... + 7 points); participation in city, republican or international competitions (5... + 7 points), positive dynamics of indicators of physical condition in the diary of self-control (5... + 7 points).

The amount of incentive points may not exceed 10 points.

• *Deadline and rescheduling policy: classes that are missed for no good reason are completed at the end of the semester. Students have the opportunity to reshuffle in the presence of the commission.*

• *Other requirements that do not contradict the legislation of Ukraine and the regulations of the University: when taking the test, students must follow the rules of safety.*

• *Policy on academic integrity: the policy, principles of academic integrity and norms of ethical conduct of students and employees of the University are defined in the Code of Honor of KPI. Igor Sikorsky (see: <https://kpi.ua/code>).*

8. Types of control and rating system for assessing learning outcomes

1. Execution of test tasks in practical classes

In practical classes № 1-16 test tasks (according to the theoretical and practical components) each component is evaluated in 1 point.

The maximum number of points for test tasks is 32 points.

2. Modular control work of MCR

Conducted at the 17th practical lesson in the form of a test containing 36 test tasks, each correct answer is estimated at 0.5 points.

The maximum score is 18 points.

3. Tests on physical fitness - 50 points.

Jump up from a place (cm)

	Qualification standards						Non passed
Male	55	52	49	46	43	40	≤39
Female	45	42	39	36	33	30	≤29
Points	10	9	8	7	6	5	0

Agility test Shuttle run 4 x 9 m (sec.)

	Qualification standards						Non passed
Male	9,0	9,4	9,8	10,3	10,8	11,0	>11,0
Female	10,4	10,7	11,2	11,6	12,0	12,3	>12,3
Points	10	9	8	7	6	5	0

Strength test Pushups (amount)

	Qualification standards						Non passed
Male	38	32	28	24	22	20	<5
Female	20	15	12	10	8	7	<7
Points	10	9	8	7	6	5	0

Feasibility test: Tilt of torso in sitting position (cm)

	Qualification standards						Non passed
Male	13	11	9	7	5	3	<3
Female	16	14	12	10	8	6	<6
Points	10	9	8	7	6	5	0

Swimming freestyle (m)

	Qualification standards						Non passed
Male	100	75	50	25	<25	3	<3
Female	100	75	50	25	<25	6	<6
Points	10	8	6	4	0	5	0

Calendar control is carried out during the semester as a monitoring of the current state of compliance with the requirements of the syllabus. A student receives a positive result from the QC when his current rating score is at least 50% of the maximum possible at the time of the QC.

The final assessment of the student's mastery of the educational component is assessed by the result of his work for the semester with the transfer of his rating points to the university assessment scale (Table 1).

The final student rating cannot exceed 100 points!

Semester control – final test

If the student scores less than 60 points in the semester or wants to increase his rating point, then in the last scheduled class (18th week), he is given the opportunity to perform an integrated test, and his previous rating is canceled.

Test control work is carried out in the form of testing. The student is offered an integrated test containing 50 questions, each correct answer is evaluated in 2 points.

The maximum number of points for the integrated test is 100 points.

Correspondence of rating points to grades on the university scale.

Table 1. Translation of rating points to grades on a university scale

Number points	Assessment on the university scale
100-95	Perfectly / Відмінно
94-85	Very good / Дуже добре
84-75	Good / Добре
74-65	Satisfactorily / Задовільно
64-60	Enough / Достатньо
Less 60	Unsatisfactorily / Незадовільно
Admission conditions are not met	Not allowed / Не допущено

8. Additional information on the course (educational component)

During the passage of educational material on the discipline provides for the use of modern technologies in the educational process. During the academic period, students are expected to use tools and methods of self-control over their health, their compliance with the requirements for the prevention of injuries and diseases.

Practical tasks are given to students depending on the current state of functional readiness of their body and the degree of their mastery of the technique of performing sports and physical exercises.

The method of realization of tasks is regulated by safety rules and realization by students of independent control over a condition of the basic functional systems.

The practical classes solve problems to increase the level of development of physical and mental qualities, use analytical approaches to the choice of methods for developing the strength of individual muscles and their groups, as well as methods and means of active recreation and recovery.

During classes, in accordance with the requirements and forms of organization of tennis lessons, training equipment and sports facilities are used.

The program material for groups of initial physical training includes:

- Physical training, the main purpose of which is to create a base for improving the level of skill with the help of general physical training.
- Technical training, the main purpose of which is to improve individual technique, expand the range of motor skills.

Syllabus:

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