

Clinical Medicine and Public Health Program outline

This document outlines the scope of themes, which may be included in the Olympiad tests. The themes are grouped by areas and are followed by a list of recommended literature in the Russian and English languages.

The skill set of the winner of the Olympiad in Clinical Medicine and Public Health

The winner of the Open Doors Olympiad in Clinical Medicine and Public Health must have the following professional skills corresponding to the types of professional competencies, formed by Master degree programs in the universities of Russia:

analytical skills:

- basic knowledge, skills and abilities to carry out a critical analysis of problem situations on the basis of a systemic approach, to develop an action strategy taking into account the diversity of cultures in intercultural interaction; to apply modern methods of collecting and processing information, to carry out statistical analysis and interpret its results; to study, analyze and assess trends, to predict the development of events in the sphere of public health (**CM&PH-1**)¹

general communication skills:

- basic knowledge, skills and abilities to use modern communication technologies, including in foreign language (s), for academic and professional interaction, observing the basic requirements of information security (**CM&PH-2**)²

brief description of competence CM&PH-2: potential to acquire the ability to apply modern achievements in the field of communication, to use specific terminology for academic and professional interaction)

¹ This corresponds to competencies UC-1, UC-5, GPC-4 of the Federal Standard of Higher Education 3+ Master's programs: (32.04.01 Public health)

² This corresponds to competencies UC-4, GPC-2 of the Federal Standard of Higher Education 3+ Master's programs: (32.04.01 Public health)
(32.04.01 Public health)

Project-oriented skills:

- basic knowledge, skills and abilities to prepare and use different types of documentation: scientific, research and production, project, organization and management as well as regulatory documents in the health care system (CM&PH-3)³

brief description of competence CM&PH-3: potential to acquire the ability to develop and use new and existing scientific, research and production, design, organizational, management and regulatory documentation in the health care system

- basic knowledge, skills and abilities to organize patient care and provide first pre-medical health care in case of emergency, during epidemics and in mass casualty areas (CM&PH-4)⁴

brief description of competence CM&PH-4: potential to acquire the ability to use knowledge and skills to provide first pre-hospital medical treatment in emergency situations

Competencies	The winner of the Open Doors Olympiad in Clinical Medicine and Public Health must:		
	know	be able to	master
CM&PH-1 potential (basic knowledge, skills and abilities) to acquire the ability to carry out a critical analysis of problem situations on the basis of a systematic approach, to develop an action	basic methods of critical analysis; methodology of a systems approach; different historical types of cultures; mechanisms of intercultural interaction in	identify problem situations using methods of analysis, synthesis and abstract thinking; search for solutions to problem situations based on actions,	technologies for solving problems; skills of developing an action strategy; critical analysis skills; skills of forming a psychologically comfortable

³ This corresponds to competence GPC-3 of the Federal Standard of Higher Education 3+ Master's programs: (32.04.01 Public health) (32.04. Public health)

⁴ This corresponds to competence GPC-6 of the Federal Standard of Higher Education 3+ Master's programs: (32.04.01 Public health)

<p>strategy; analyze and take into account the diversity of cultures in the process of intercultural interaction; to the application of modern methods of collecting and processing information, to carrying out statistical analysis and interpretation of results, to studying, analyzing, assessing trends, to predicting the development of events in the state of population health</p>	<p>society at the present stage;</p> <p>the principles of correlation between global and national cultural processes;</p>	<p>experiments and experience; analyze the phenomena and process the results obtained;</p> <p>determine within the framework of the chosen algorithm the questions (tasks) subject to further development and propose ways of solving them;</p> <p>explain the phenomena of culture, their role in human life;</p> <p>adequately assess intercultural dialogues in modern society;</p> <p>interact tolerantly with representatives of different cultures;</p>	<p>professional environment</p> <p>skills of intercultural interaction, taking into account the diversity of cultures;</p>
<p>CM&PH-2 potential (basic knowledge, skills and abilities) to acquire the ability to use modern communication technologies, including in foreign language</p>	<p>modern means of information and communication technologies;</p> <p>linguistic material (lexical units and grammar structures), necessary and</p>	<p>to listen and comprehend authentic socio-political, journalistic (media) and pragmatic texts related to various types of speech;</p>	<p>practical skills of using modern communication technologies;</p> <p>grammatical categories of the studied foreign language (s);</p>

<p>(s), for academic and professional interaction, observing the basic requirements of information security</p>	<p>sufficient for communication in various environments;</p>	<p>to identify significant information in them;</p> <p>understand the content of popular science and scientific texts, blogs/websites;</p> <p>to identify relevant information from pragmatic texts of reference, information and advertising nature;</p> <p>participate in a dialogue, observing the norms of speech etiquette, using various speech strategies;</p> <p>deliver a monologue;</p> <p>draft business documents, including curriculum vitae / resume and a cover letter required by employers;</p> <p>take notes of the main thoughts and facts (from audio recordings and written texts,</p>	
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		<p>write abstracts of presentations / articles;</p> <p>maintain communication by email;</p>	
<p>CM&PH-3 potential (basic knowledge, skills and abilities) to acquire the ability to prepare and apply scientific, research and production, project, organizational, management and regulatory documentation in the health care system</p>	<p>classification of scientific, research and production, organizational and managerial and regulatory documentation, and their application in medical practice;</p>	<p>use and independently prepare the necessary scientific and other types of documentation required for performing professional tasks;</p>	<p>choosing the necessary documentation required for professional activities;</p>
<p>CM&PH-4 potential (basic knowledge, skills and abilities) for acquiring the ability to organize patient care and provide first pre-medical health care in case of emergency in emergencies, epidemics, in outbreaks of mass destruction</p>	<p>main types of medical assistance in evacuation of the population in emergency situations;</p>	<p>provide medical assistance in the event of emergencies, epidemics, disease outbreaks and situations of mass casualties;</p>	<p>implementing medical, diagnostic and evacuation measures in emergency situations;</p>

Thematic content

Thematic block 1. Therapy

1. Organization of the activities of the general practitioner and the general therapy department of a medical organization. Medical care in emergency situations.
2. Classification, diagnosis and treatment of pneumonia.
3. Risk factors for the development of atherosclerosis, ischemic heart disease (smoking, lipid metabolism disorders, high blood pressure, diabetes mellitus, hypothyroidism and other endocrine diseases, metabolic syndrome, neuropsychic stress).
4. Modern understanding of the gastroesophageal reflux disease.
5. Glomerulonephritis: etiology, pathogenesis, diagnosis and treatment.
6. Anemia. Differential diagnosis of anemia.
7. Clinical and radiological manifestations of rheumatoid arthritis. Treatment of rheumatoid arthritis.
8. Diabetes mellitus: classification, symptoms, diagnostic criteria, treatment.

Thematic block 2. Surgery

1. The structure of the anterior abdominal wall. Anatomy and physiology of the parenchymal organs of the abdominal cavity. Anatomy and physiology of the hollow organs of the abdominal cavity. The location of the abdominal organs depending on the relationship to the peritoneum (intra-, meso- and extraperitoneal). Blood supply of the large and small intestine.
2. Algorithm for examining a patient with abdominal pain. Differential diagnosis of the acute abdominal syndrome. Diagnostics and treatment of acute cholecystitis, acute appendicitis, and acute pancreatitis. Peritonitis: etiology and treatment principles. Diagnostics, differential diagnosis and treatment of intestinal obstruction.
3. Blood supply to the lower extremities, the anatomy of the arterial and venous walls. Obliterating diseases of the lower extremities. Differential diagnosis of leg pain. Treatment tactics for obliterating diseases of the arteries of the lower extremities.
4. Infusion-transfusion therapy of acute inflammatory diseases of the abdominal organs. The main groups of drugs used to treat obliterating diseases of the lower extremities to prevent the development of critical ischemia. The main groups of drugs used to treat acute thromboembolic complications in surgical patients. Mechanisms of their action.

Thematic block 3. Public health and its determinants. Characteristics of medico-demographic processes. Morbidity and disability of the population. Medical and social problem.

1. Public health and healthcare as a science.
2. World Health Organization. Tasks, functions and the role in the modern world.

3. The concept of demography as a subject of study, sections of demography.
4. The concept of a medical and social problem.
5. Diseases of the circulatory system as a medical and social problem.
6. Malignant neoplasms as a medical and social problem.
7. Respiratory diseases as a medical and social problem.
8. Drug addiction and substance abuse as a medical and social problem. Justification of the relevance and social significance of drug addiction and substance abuse.
9. Disability as a medical and social problem.

Thematic block 4. Statistics

1. The main stages of medical statistics research.
2. Statistical population and its structure.
3. Average values, their relevance and application in medical practice.
4. Statistical assessment of the reliability of research results.

Thematic block 5. Basics of public health protection

1. Public health protection: basic concepts and principles of health protection. The rights and obligations of citizens in the field of health protection.
2. Organization of medical care. Types, forms, conditions for the provision of medical care.
3. Primary health care.
4. Organization of emergency medical care.
5. The system of protection of mothers and children: principles, objectives, stages in the provision of medical care.
6. The development of specialized types of medical care at the present stage.
7. Health insurance: definition, principles.
8. Quality of health care: definition and main characteristics (effectiveness, efficiency, legality, adequacy, satisfaction, etc.).
9. Procedures and standards for the provision of medical care.
10. Medical prophylactics: aims, objectives, types, criteria for assessing effectiveness.
11. Promotion of healthy lifestyle

Thematic block 6. Cell biology, cytology, histology

1. Cytology
2. General histology
3. Private histology
4. Embryology

Thematic block 7. Pharmacology, clinical pharmacology

1. Pharmacodynamics of drugs

2. Methodology for the search for new biologically active pharmacological substances.
3. Interaction of drugs.
4. Groups of drugs (drugs for anesthesia; antiepileptic drugs; drugs used in the treatment of Parkinson disease; psychotropic drugs, etc.)

List of recommended literature

Thematic block 1. Therapy

1. Jameson, J. Larry, Fauci, Anthony S., Kasper, Dennis L., Hauser, Stephen L., Longo, Dan L., Loscalzo, Joseph, and Harrison, Tinsley Randolph. Harrison's Principles of Internal Medicine. 20th ed. New York: McGraw Hill Education, 2018. McGraw-Hill's AccessMedicine. Web.
2. Goldman, L., Schafer, A. I., & Cecil, R. L. 1. (2020). Goldman-Cecil medicine (26th edition.). Philadelphia, PA: Elsevier.
3. Mobasser, Sarvenaz S. Saadat. Deja Review. Internal Medicine. Second ed. New York: McGraw-Hill Medical, 2011. Print. Deja Review.
4. Mayo Clinic Internal Medicine Concise Textbook. Front Cover. Thomas M. Habermann, Amit K. Ghosh. CRC Press, Nov 1, 2007 - Medical - 928 pages
5. Internal Medicine / Springer International Publishing Switzerland 2017
<https://link.springer.com/book/10.1007/978-3-319-39747-4#authorsandaffiliationsbook>
6. Approach to Internal Medicine / Springer Science+Business Media, LLC 2011
<https://link.springer.com/book/10.1007/978-1-4419-6505-9#authorsandaffiliationsbook>

Thematic block 2. Surgery

1. Petrov S.V. General surgery: a textbook. - Publisher of GEOTAR-Media, 2016.
2. Gostishchev V.K. General surgery: a textbook. - Publisher GEOTAR-Media, 2016.
3. General surgery [Electronic resource]: a textbook / VK Gostishchev. - 5 th ed., Pererab. and additional. - M.: GEOTAR-Media, 2015. -
<http://www.studmedlib.ru/book/ISBN9785970432143.html>
4. General Surgery: Textbook / A.V. Sazhin, A.D. Klimiashvili. - Moscow: Medical Information Agency Publishing House LLC, 2019. - 424 seconds
5. Trends in Cerebrovascular Surgery / DOI <https://doi.org/10.1007/978-3-319-29887-0> Copyright Information: Springer International Publishing Switzerland 2016 ISBN978-3-319-29885-6 <https://link.springer.com/book/10.1007/978-3-319-29887-0#editorsandaffiliations>

6. Upper Abdominal Surgery / DOI <https://doi.org/10.1007/978-1-4471-5436-5> ISBN978-1-4471-5435-8 <https://link.springer.com/book/10.1007/978-1-4471-5436-5#editorsandaffiliations>

7. Lower Abdominal and Perineal Surgery / Brendon J. Coventry / DOI <https://link.springer.com/book/10.1007%2F978-1-4471-5469-3> ISBN978-1-4471-5468-6

Thematic block 3. Public health and its determinants. Characteristics of medico-demographic processes. Morbidity and disability of the population. Medical and social problem.

1. WORLD MIGRATION REPORT 2020
https://www.un.org/sites/un2.un.org/files/wmr_2020.pdf

2. <https://www.who.int/news-room/fact-sheets/detail/the-top-10-causes-of-death>

3. Begun D.N., Borshchuk E.L., Begun T.V. COURSE BOOK FOR PRACTICAL TRAINING IN THE SPHERE OF PUBLIC HEALTH AND HEALTH CARE Orenburg, 2018. https://www.orgma.ru/files/kafedry/kafedra-obshzestvennogo-zdorovya-i-zdravoohraneniya-1/info_stud/new/FF2/Textbook.pdf

4. The Demography of Health and Healthcare (The Springer Series on Demographic Methods and Population Analysis, 13) 3rd ed. 2013 Edition

5. WORLD REPORT ON DISABILITY
<https://www.who.int/publications/i/item/9789241564182>

6. WHO POLICY ON DISABILITY
<https://www.who.int/publications/i/item/9789240020627>

7. Introduction to Public Health. Schneider Mary-Jane. 2016

8. Public health. Turnock, Bernard J. 2015

9. Goldsteen RL, Goldsteen K, Dwelle TL. Introduction to public health: promises and practices. Second edition. Springer Publishing Company, LLC, 2015

10. Currie C et al., eds. Social determinants of health and well-being among young people. Health Behaviour in School-aged Children (HBSC) study: international report from the 2009/2010 survey. Copenhagen, WHO Regional Office for Europe, 2012 (Health Policy for Children and Adolescents, No. 6)

11. Krieger N. Epidemiology and the people's health: theory and context. Oxford University Press, 2011

12. Marmot M. UCL Institute of Health Equity. Review of social determinants and the health divide in the WHO European Region: executive summary. Copenhagen: WHO Regional Office for Europe, 2014.

13. Grundy E. Demography and public health. In Detels R, McEwen J, Beaglehole R, Tanaka H (Eds). Oxford Textbook of Public Health. 4th edition. Oxford University Press, 2012

14. Federal State Statistics Service <https://eng.rosstat.gov.ru/>

15. Public health and health care. Health Economics: Textbook. In 2 volumes. Ed. V.Z. Kucherenko M.: GEOTAR - Media. 2014.

Thematic block 4. Statistics

1. Glantz S.A. Primer of Biostatistics. McGraw-Hill, 2001. - 489 pages.
2. David Katz Joann Elmore Dorothea Wild Sean Lucan. Jekel's Epidemiology, Biostatistics, Preventive Medicine, and Public Health. 4th Edition, Saunders. 2013, 420 p.
3. Biostatistics: a methodology for the health sciences / Gerald van Belle ... [et al.]– 2nd ed. p. cm. – (Wiley series in probability and statistics)
4. Biostatistics and Epidemiology by Sylvia Wassertheil-Smoller; Jordan Smoller (2015)
5. Essentials of epidemiology in public health / Ann Aschengrau, George R. Seage III: Sudbury, Mass.: Jones and Bartlett Publishers, 3rd. edition.; 2014.
6. Handbook of Health Survey Methods by Timothy P. Johnson (2014).
7. Fundamentals of statistical analysis in medicine / ed. Reshetnikova V.A. - M.: LLC "Publishing House" Medical Information Agency ", 2019. - 176 p.

Thematic block 5. Basics of public health protection

1. Organization of medical care in the Russian Federation / ed. Reshetnikova V.A. - M.: LLC "Publishing House" Medical Information Agency ", 2018. - 432 p.
2. Begun D.N., Borshchuk E.L., Begun T.V. Course book for practical training in the sphere of public health and health care. Orenburg, 2018.
https://www.orgma.ru/files/kafedry/kafedra-obshchestvennogo-zdorovya-i-zdravoohraneniya-1/info_stud/new/FF2/Textbook.pdf
3. Quality Assessment and Assurance: Unity of Purpose, Diversity of Means. Avedis Donabedian. Inquiry Vol. 25, No. 1, The Challenge of Quality (Spring 1988), pp. 173-192.
4. Healthcare Management: Organisation Design and Behavior, 5th ed., edited by Shortell & Kaluzny. Albany, NY: Thomson Delmar Learning (2006).
5. Introduction to Health Care Management, Third Edition by Sharon B. Buchbinder and Nancy H. Shanks (2017).
6. Bergeron, B. P. (2006). Performance management in healthcare: From key performance indicators to balanced scorecard. HIMSS: Chicago.
7. Lombardi, D. M., Schermerhorn, J. R., Jr. (2007). Health care management. John Wiley & Sons, Inc: United States. b. Longest, B. B. & Darr, K. (2008). Managing health services organisations and systems. 5th edition. Health Professions Press: Maryland.
8. Oxford Textbook of Primary Medical Care. Jones, R; Britten, N; Culpepper, L; Gass, D; Grol, R; Mant, D; Silagy, C. Oxford: OUP, 2003.
9. The healthcare quality book: vision, strategy, and tools / by Scott B. Ransom, Maulik Joshi, David Nash. 2004.
10. J. Naidoo, J. Wills Developing Practice for Public Health and Health Promotion. 3d ed. 2010

Thematic block 6. Cell biology, cytology, histology

ONE CLICK TO OPEN ALL DOORS

1. Compendium of Histology, Anders Rehfeld, Malin Nylander, Kirstine Karnov 2017 <https://link.springer.com/book/10.1007/978-3-319-41873-5>
2. Histology with Regional and Ethnic Variation, Michael B. Morgan 2018 https://link.springer.com/chapter/10.1007/978-3-319-74847-4_3
3. Histology, Stefan Dirnhofer 2017 https://link.springer.com/chapter/10.1007/978-3-319-76879-3_3
4. Sinonasal Tract - Anatomy and Histology, Margaret S. Brandwein 2016 https://link.springer.com/chapter/10.1007/978-3-319-33323-6_1
5. Colon, Anatomy and Histology, Sibel Erdamar 2016 https://link.springer.com/referenceworkentry/10.1007/978-3-319-40560-5_1446

Thematic block 7. Pharmacology, clinical pharmacology

1. Clinical pharmacology / Lionel Raymon. [United States] : 2016. XIII, 393 p.
2. Pharmacology: Illustrated textbook / R. N. Alyautdin. Moscow: GEOTAR-Media, 2020. 312 p.
3. Pharmacology/ Whalen K., Finkel R., Panavelil T.A. Lippincott Illustrated Reviews: sixth edition. 2015. 680p.
4. Netter's Illustrated Pharmacology / Raffa R.B., Rawls S.M., Beyzarov E.P. MediMedia. 2005. 426p.
5. Pharmacology / Rang H.P., Ritter J.M., Flower R.J., Henderson G. Elsevier. 2016. Eighth edition. 738 p.
6. Anesthesia and Neurotoxicity / Springer Japan 2017 <https://link.springer.com/book/10.1007/978-4-431-55624-4#editorsandaffiliations>
7. Side Effects of Medical Cancer Therapy / Springer International Publishing AG, part of Springer Nature 2016 <https://link.springer.com/book/10.1007/978-3-319-70253-7#editorsandaffiliations>
8. Biological Effects of Fibrous and Particulate Substances / Springer Japan 2016 <https://link.springer.com/book/10.1007/978-4-431-55732-6#editorsandaffiliations>

List of Recommended Online Courses

Thematic block 1. Therapy

1. Internal Medicine (Online Learning) [https://www.ed.ac.uk/studying/postgraduate/degrees/index.php?r=site/view&editon=2021&id=692;](https://www.ed.ac.uk/studying/postgraduate/degrees/index.php?r=site/view&editon=2021&id=692)
2. Update in Internal Medicine <https://online-learning.harvard.edu/course/update-internal-medicine?delta=0>
3. Internal Medicine Board Review <https://imcourses.mayo.edu/internal-medicine-board-review/>

4. Internal Medicine (Online Learning)
<https://www.mastersportal.com/studies/38219/internal-medicine.html>
5. Masterclass in Internal Medicine
<https://www.medvarsity.com/courses/masterclass-in-internal-medicine/us/>
6. International British Online School
https://ibos.school/?gclid=EAIaIQobChMI8bGls__k8QIVkaiyCh3QIQBCEAMYAyAAEgJCGvD_BwE
7. Internal Medicine <https://cmecatalog.hms.harvard.edu/topics/internal-medicine>

Thematic block 2. Surgery

1. Введение в медицинский английский
<https://medicalenglish.ru/courses/surgery>
2. Курс общей хирургии <https://www.lecturio.com/medical-courses/general-surgery.course#/>
3. Введение в травматологию <https://edu.kpfu.ru/enrol/index.php?id=3736>
4. School of Modern Surgery / <http://www.websurg.ru/>
5. Doctor - Surgeon Medical Surgical Portal / <http://xupypr.org/>
6. WebSurg / <http://www.websurg.com/?lng=ru>

Thematic block 3. Public health and its determinants. Characteristics of medico-demographic processes. Morbidity and disability of the population. Medical and social problem.

1. Introduction to Demographic Methods
<http://ocw.jhsph.edu/index.cfm/go/viewCourse/course/DemographicMethods/coursePage/index/>
2. Introduction to Public Health <https://www.youtube.com/watch?v=-dmJSLNgjxo>
3. Data and Health Indicators in Public Health Practice
<https://www.coursera.org/learn/data-public-health#about>
4. An Introduction to Global Health <https://www.coursera.org/learn/global-health-introduction#about>
5. Global Health and Disability <https://www.classcentral.com/course/global-disability-9826>
6. Non-Communicable Diseases in Humanitarian Settings
<https://www.classcentral.com/course/non-communicable-diseases-in-humanitaria-12223>
7. Noncommunicable diseases and disability case study
<https://www.futurelearn.com/info/courses/global-disability/0/steps/37596>

8. Social Determinants of Health <https://www.classcentral.com/course/social-determinants-of-health-27965>

9. Essentials of Global Health <https://www.coursera.org/learn/essentials-global-health>

Thematic block 4. Statistics

1. Introduction to Statistics & Data Analysis in Public Health
<https://www.coursera.org/learn/introduction-statistics-data-analysis-public-health>

2. Biostatistics in Public Health
<https://www.coursera.org/courses?query=biostatistics>

3. Understanding Clinical Research: Behind the Statistics
<https://www.coursera.org/learn/clinical-research>

4. Summary Statistics in Public Health
<https://www.classcentral.com/course/summary-statistics-12762>

5. Public Health Courses <https://www.classcentral.com/subject/public-health>

6. Online Public Health Courses <https://online-learning.harvard.edu/subject/public-health>

Thematic block 5. Basics of public health protection

1. Epidemiology: The Basic Science of Public Health.
<https://www.coursera.org/learn/epidemiology>

2. NCD Prevention and Control
<https://www.youtube.com/playlist?list=PL6KeRpsLmmDJRrgaFWeFFqPqHcAZVaXFcH>

3. Leading Healthcare Quality and Safety
<https://www.classcentral.com/course/quality-healthcare-6316>

4. Measuring the Success of a Patient Safety or Quality Improvement Project (Patient Safety VI) <https://www.coursera.org/learn/patient-safety-measurement>

5. Principles of Health Law and Regulatory Issues
<https://www.classcentral.com/course/edx-principles-of-health-law-and-regulatory-issues-11564>

6. Health for All Through Primary Health Care
<https://www.classcentral.com/course/healthforall-837>

7. The Economics of Health Care Delivery
<https://www.coursera.org/learn/health-economics-us-healthcare-systems>

8. Types of Health Insurance <https://www.udemy.com/course/basics-of-health-insurance/>

Health Promotion Open course <https://onlinefreecourse.com/health-promotion-open-course/>

Thematic block 6. Cell biology, cytology, histology

1. http://www.bu.edu/histology/m/t_electr.htm - histology learning system (database of different cell structure images and tissue images).
2. <http://histologyguide.org> - Histology Guide (virtual microscope slides and electron micrographs for learning human histology).
<http://www.anatomyatlases.org/MicroscopicAnatomy/MicroscopicAnatomy.shtml> - Atlas of Microscopic Anatomy - A Functional Approach: Companion to Histology and Neuroanatomy: Second Edition
3. <https://www.ouhsc.edu/histology/> - University of Oklahoma Health Sciences Center Interactive Histology Atlas.
4. <http://histologyatlas.wisc.edu> - database of different cell structure images and tissue images.
5. Histology: Using Microscopy to Study Anatomy and Identify Disease
<https://www.futurelearn.com/courses/histology>
6. Histology <https://www.lecturio.com/medical-courses/histology.course#/>

Thematic block 7. Pharmacology, clinical pharmacology

1. The Coursera for Campus Student
<https://www.coursera.org/courses?query=pharmacology>
2. Class Central <https://www.classcentral.com/subject/pharmacology?free=true>
3. Harvard Online Courses <https://online-learning.harvard.edu/subject/pharmacology>
4. edX <https://www.edx.org/course/introduction-to-pharmacology>
5. Future Learn <https://www.futurelearn.com/subjects/healthcare-medicine-courses/pharmacy>