



APPROVED:

Vice-rector for study and methodical work

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Принятие решений на основе данных / Data driven decision-making

Syllabus of the course

Specialty	38.03.02 Management
Specialization	Business management and digital innovations
Level of higher education	Bachelor
Form of training	Full-time
Year of enrolment	2022

Authored by:

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Total number of hours	108	Form of final attestation: Test: semester 6
incl:		
contact work	28	
self-study	80	
practical training	0	
control hours	0	

Hours distribution:

Semester:	6
Type of classes	Hours
Contact hours	4
Practical training	24
Laboratory work	
Total contact hours	28
Self-study	80
Control hours	0
Total academic hours	108
Total credits	3

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1. LEARNING OBJECTIVES

Objective:	To equip students with theoretical knowledge and practical skills in making optimal decisions based on data obtained under conditions of complete certainty, uncertainty and risk, using mathematical and statistical methods and models.
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2. COURSE PLACE IN THE PROGRAMME STRUCTURE

The discipline B1.O.DV Data driven decision-making is a part of Block 1.

3. EXPECTED LEARNING OUTCOMES

Code and name of graduate competence	Code and name of the competence achievement indicator	Expected learning outcomes
UC-1 – Is able to search for, critically analyse and synthesise information, and apply a systematic approach to solve problems	UC-1.3 – Selects the best solution to the problem, arguing his/her choice	<p>To know: the main approaches to data-driven management decisions depending on external and internal environmental conditions, as well as the key steps in the process of making and justifying management decisions and methods for assessing their effectiveness</p> <p>To be able to: analyse data of different nature in a systematic way and use it to find the best possible management solutions.</p> <p>To possess: mathematical and statistical methods for justifying data-driven management decisions, as well as decision-support tools.</p>

4. COURSE STRUCTURE AND CONTENT

Code and name of the topics	Course content	Academic hours			
		Contact work			Self-study
		Lectures	Practices	Workshops	
Topic 1. A data-centric approach to data analysis.	A data-driven approach to data analysis. Stages of data-driven decision-making. Generalised decision-making algorithm using data-driven management principles, CRISP-DM. The V-model of Big Data.	2	4		12
Topic 2. BI solutions for data analytics and decision-making.	Identifying patterns in data, building hypotheses and testing them through modelling. BI solutions for data analytics and decision making. Analytical dashboards.	2	6		18
Topic 3. Modelling based on statistical	Modelling based on statistical inference. Estimating the significance of variables. Preparation and visualisation of information and analytical reports.		4		16

inference.					
Topic 4. Data-driven marketing management.	Data-driven marketing management. Key performance indicators. Search for associative rules. Market basket analysis.		4		16
Topic 5. Features of working with large volumes of data.	Features of dealing with large volumes of data. Hidden patterns in big data. Dimensionality reduction methods. Application of the principal component method and its non-linear counterparts. Working with textual data.		6		18
Control hours:					0
Total hours:		4	24	0	80

5. TEACHING AND LEARNING TOOLS OF THE COURSE

5.1 Recommended literature

Bibliographic description of the publication (author, title, type, place and year of publication, number of pages)	Digital resources
Nabatova, Daria Sergeevna. Mathematical and instrumental methods of decision support: Textbook and practical work for universities / Nabatova D. S. - Electron. - Moscow: Yurait, 2021. - 292 c.	https://urait.ru/bcode/469195
Khalin, Vladimir Georgievich. Decision Support Systems: Textbook and Practice for Higher Education Institutions / edited by Khalin V.G., Chernova G.V. - Electronic Data. - Moscow: Eureit, 2021. - 494 c.	https://urait.ru/bcode/469242
Kravchenko, Tatyana Konstantinovna. Decision Support Systems: Textbook and practical work for universities / Kravchenko T.K., Isaev D.V. - Electron. - Moscow: Yurite, 2021. - 292 c.	https://urait.ru/bcode/469581
Busov Vladimir Ivanovich. Theory and Practice of Managerial Decision Making: Textbook and Practice for Universities / Busov V.I., Lyabakh N.N., Satkalieva T.S., Taspenova G.A., ed. by Busov V.I. - Electronic data. - Moscow: United Arab Emirates, 2021. - 279 c.	https://urait.ru/bcode/469212
Bolotova, Ludmila Sergeyevna. Decision Support Systems in 2 parts. Part 1: Textbook and practical work for universities / Bolotova L.S.; ed. by Volkova V.N., Bolotov E.S. - Electron. - Moscow: Eurayt, 2020. - 257 c.	https://urait.ru/bcode/451321

5.2 List of software (including national production)

- 7-Zip
- LibreOffice
- ОС АЛЪТ образование 10
- Anaconda Individual Edition
- Python

5.3 List of reference systems and modern professional databases

№	Name of reference systems and professional databases
1.	Digital library Grebennikon.ru – www.grebennikon.ru
2.	Science Digital Library eLIBRARY – www.elibrary.ru
3.	Science Digital Library КиберЛенинка – www.cyberleninka.ru
4.	Database ПОЛПРЕД Справочники – www.polpred.com
5.	Database OECD Books, Papers & Statistics on the platform OECD iLibrary www.oecd-ilibrary.org
6.	Legal reference system КонсультантПлюс (installed resource UNECON or www.consultant.ru)
7.	Legal reference system «ГАРАНТ» (installed resource UNECON or www.garant.ru)
8.	Information and referral system «Кодекс» (installed resource UNECON or www.kodeks.ru)
9.	Digital library system BOOK.ru - www.book.ru
10.	Digital library system ЭБС ЮРАЙТ – www.urait.ru
11.	Digital library system ЗНАНИУМ (ZNANIUM) – www.znanium.com
12.	Digital library UNECON – opac.unecon.ru

6. TECHNICAL FACILITIES

There are special rooms for lectures, seminars, coursework, group and individual consultations, current and interim assessments, as well as rooms for self-study.

The premises are equipped with equipment and teaching aids.

The rooms for students' independent work are equipped with computers with Internet connection and access to the university's electronic learning environment.

Name of classroom	Classroom location
Classroom 3024 Laboratory of department of banks, financial markets and insurance. Specialized furniture and equipment: Training furniture for 26 seats (tables 13pcs, chairs 26pcs.) Workplace of the teacher, a board marker on wheels 1pcs, a table 1pcs, a chair 1pcs, bookcases 3pcs, bookcases with mezzanine 3pcs, a drawer 2pcs, rack rack 1pcs, a board of announcements 1pcs. IP Phone Cisco IP Phone 7911G - 1 pc. Mobile multimedia set: HP 250 G6 1WY58EA laptop, LG PF1500G multimedia projector. Sets of demonstration equipment and training and visual aids: multimedia applications for lecture courses and practical classes, interactive training and visual aids.	191023, St. Petersburg, Griboedova canal, 30-32, lit. A, B, P
Classroom 2064 Training classroom (for lecture- and seminar-type classes, coursework, group and individual consultations, current control and intermediate attestation), equipped with a multimedia system. Specialized furniture and equipment: Educational furniture for 90 seats, teacher's workplace, chalk board (3 sections) - 1 pc, desk - 1 pc, table - 1 pc, chair - 2 pcs., Computer Intel i3-2100 2.4 Ghz/500/4/Acer V193 19" - 1 pc, Hi-Fi PRO MASK6T-W (2 pcs.) - 1 pc., Mixer-amplifier AA-120 Roxton - 1 pc., Mixer-amplifier TA-1120-1 complete with Behringer XM8500 ULTRAVOICE - 1 pc., Screen Media Champion 244x183cm (SCM-4304) - 1 pc., NEC M350 X projector with add. - 1 pc., Teacher's desk, tabletop size 1200*750mm - 1 pc. Sets of display equipment and visual aids: multimedia applications for lecture courses and practical sessions, interactive teaching and visual aids.	191023, St. Petersburg, Griboedova canal, 30-32, lit. A, B, P

Classroom 2062 Training classroom (for lecture- and seminar-type classes, coursework, group and individual consultations, current control and intermediate attestation), equipped with a multimedia system. Specialized furniture and equipment: Educational furniture for 56 seats, teacher's workplace, chalk board (one section) - 1 pc, chair - 1 pc, desk - 1 pc, chair - 2 pcs, Intel Core i3-2100 CPU @ 3.10GHz/4/500 Acer V193 computer - 1 pc, Panasonic PT-VX610E multimedia projector - 1 pc, Optoma EX-632 multimedia projector - 1 pc, DRAPER TARGA 221x295 screen - 1 pc. Sets of display equipment and visual aids: multimedia applications for lecture courses and practical sessions, interactive teaching and visual aids.	191023, St. Petersburg, Griboedova canal, 30-32, lit. A, B, P
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7. METHODOLOGICAL GUIDELINES FOR STUDENTS

The following documents should be made available to the trainee before the start of the course:

- training and methodological documentation;
- local normative acts regulating the main issues of the organisation and implementation of educational activities, including those regulating the procedure for current monitoring and interim assessment of students;
- the schedule of consultations of the teaching staff.

The level and depth of mastering the discipline is determined by the active and systematic work of students in lectures, seminars, independent work, including in terms of identifying the most significant and relevant problems for further study. A special condition for qualitative mastering of the discipline is an effective organisation of work, which allows distributing the academic workload evenly in accordance with the schedule of the educational process.

When preparing for classes, students have the opportunity to attend consultations with the staff of UNECON according to the timetable set out in the schedule of consultations.

The students' in- and out-of-classroom work should aim to form:

- the fundamentals of the learner's world view and scientific understanding;
- basic knowledge relevant to the training area and the declared professional field, forming the target and professional basis for training;
- professional competences oriented towards the needs of the labour market;
- an individual trajectory by mastering a unique set of professional competences that complement the learner's competence model, through a focus on specific professional specialised areas of knowledge defined by labour market representatives;
- meta-skills for learners, such as teamwork and leadership, data analysis, digital skills, project design and implementation, intercultural interaction.

8. SPECIFICATIONS FOR TEACHING DISABLED PERSONS

Students with disabilities, if necessary, are taught on the basis of an adapted work programme using special teaching methods and didactic materials that take

into account the particularities of their psychophysical development, individual capacities and health status.

In order for disabled persons and persons with disabilities to master the curriculum, the University shall ensure that:

- for the visually impaired and visually impaired: availability of information on the timetable in accessible places and adapted forms for learners who are blind or visually impaired; presence of an assistant to assist the learner as needed; production of alternative formats of teaching materials (large print or audio files);

- for the hearing-impaired and hearing-impaired: adequate sound reproduction of information;

- for persons with disabilities and persons with mobility impairments: the possibility of unimpeded access for students to classrooms, restrooms and other areas of the department, as well as their stay in these areas.

Learners with disabilities and persons with disabilities are provided with printed and/or electronic educational resources in forms adapted to their disabilities. The education of students with disabilities may be organised with other students or in separate groups or organisations.

ASSESSMENT RESOURCES

1.1 Control tasks and assignments for interim attestation

Is not provided by the work programme of the discipline.

1.2 Topics for written task

Is not provided by the work programme of the discipline.

1.3 Interim checkpoints

Number	Type	Method of conduct	Topic number
1	Analytical work	by technical means and information systems	1-3
2	Checkpoint test	written	4-5
3	Monitoring	by technical means and information systems	1-5

1.4 Other assessment objects

Is not provided by the work programme of the discipline.

1.5 Self-study

Name of self-study	Topic number
Lectures and practical classes preparation	1-5
Performing calculations, analyses, computational-graphic and other tasks	3-5

1.6 Grading scale

Scales of assessment and procedures for assessing learning outcomes of the discipline are regulated by the Regulations on the current control of progress and interim attestation of students in higher education programmes and the Regulations on the scoring and rating system.

A grading and rating system is used to assess the learning outcomes of the discipline:

The final control of the discipline is an examination (or a differentiated test), the final grade being formed in accordance with the scale given in the table below:

Points	Grade
<55	Not passed
>=55	Passed

Grading scale

2 (points to 54)	Demonstrates a lack of understanding of the problem. Many of the requirements of the assignment are not met. An initial perception of the material is demonstrated. The work is incomplete and/or plagiarised.
3 (points 55-69)	Demonstrates a partial understanding of the problem. Most of the requirements of the task have been met. Mastery of the elements of the assigned material. The material is mostly clear and coherent.
4 (points 70-84)	Demonstrates considerable understanding of the issue by the discipline. All requirements of the assignment are fulfilled. The content of the completed tasks is disclosed and examined from different perspectives.
5 (points 85-100)	Demonstrates full understanding of the problem. All requirements of the assignment are fulfilled. Demonstrates proficiency in the discipline. The completed assignments are holistic, complete, structured, present different points of view and demonstrate creativity.