

CONDUCTING EXPERIMENTS AND PROCESSING THE RESULTS OF SCIENTIFIC RESEARCH

Type of the discipline	Selective
Educational level	Second (master)
Language of teaching	English
The number of ECTS credits established	8.0
Forms of education	Daytime

Learning outcomes. A student who has successfully completed the study of the discipline must: possess methods of searching for sources containing scientific and technical information on the topic of research of his specialty; to understand the main methods of research, regularities of the organization of research activities at different stages; acquire theoretical and practical skills of analysis and experimental research of methods, algorithms, programs of hardware and software complexes and systems; master modern tools and software for solving classification, clustering, forecasting, and optimization problems; master basic applied mathematical packages and programming environments for applying methods and means of statistical analysis to processing the results of scientific research.

Content of the discipline. Modern science and scientific research. The theory of errors in a scientific experiment. The purpose and tasks of scientific research. Mathematical and computer modeling in scientific research. Setting up a working environment with PyTorch. Neural network classification using PyTorch. Creating a dataset from torch.utils.data.Dataset. Modules in the PyTorch environment. Monitoring scientific experiments with Tensorboard and MLFlow. Implementation of scientific research in the PyTorch environment. Deployment and implementation of neural network models in the PyTorch environment.

Planned educational activity: number of classroom hours – not less than 1/3 of the total number of hours planned for studying the discipline.

Methods of education: verbal, visual, problem-solving (lectures); explanatory and illustrative, practical, research, partly research (laboratory classes), research, partly research (independent work: individual tasks).

Forms of evaluating learning results: protection of laboratory work, presentation of individual task results, control work.

Form of semester control: credit.

Educational resources:

1. Mosiuk O.O. Shtuchnyi intelekt: Vstup do mashynnoho navchannia: navchalno-metodychnyi posibnyk / za rets. M.O. Medvedievoi, I.S. Mintiia. Zhytomyr: Vyd-vo ZhDU im. Ivana Franka, 2019. 76 s. URL: <http://eprints.zu.edu.ua/32982/>
2. Horokhovatskyi V.O., Tvoroshenko I.S. Metody intelektualnoho analizu ta obrobliennia danykh: navch. posib. / za rets. V.O. Filatova, O.A. Vynokurovoi. Kharkiv: KhNURE, 2021. 92 s. URL: <https://openarchive.nure.ua/server/api/core/bitstreams/2e55d639-52fd-48d9-b7b7-14989f49f291/content>
3. Vitchenko A. O., Vitchenko A. Yu. Osnovy naukovykh doslidzhen u vyshchii shkoli : pidruch. Kyiv : FOP Yamchynskyi O.V., 2020. 272 s. URL: https://enpuir.npu.edu.ua/bitstream/123456789/33269/1/Osnovy_Naukovykh_Doslidzhen.pdf
4. Zawacki-Richter O. Systematic Reviews in Educational Research: Methodology, Perspectives and Application. Wiesbaden : Springer Nature, 2020. 161 p. URL: <https://link.springer.com/book/10.1007/978-3-658-27602-7>
5. Modulne seredovyshe dlia navchannia Moodle. URL: <https://msn.khmnu.edu.ua/>

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