

**Team work tasks for the course  
"Applied Microeconomics" in 2025-2026 academic year**

1. Students will be divided into teams based on a ranking list. The team number is indicated in the electronic journal. Each team will receive a separate case to solve. Responsibilities within the team are determined by the team captain, who is elected by the team members themselves.
2. The tasks of independent work are RESEARCH and CREATIVE in nature, and therefore it is necessary to conduct research on the problem, provide analysis of the works of scientists-researchers on this issue, determine its development prospects and retrospective analysis, offer **YOUR** vision of the solution to the problem. When developing your own model, **you should clearly state all the assumptions used**.
3. When completing the tasks, each team must hold at least one strategic session, one final presentation for the customer (teacher-lecturer) and several consultation meetings. All meetings are held at seminars on the discipline. The team carries out its own communication in the terms and methods determined by the captain. The strategic session must be held no later than 2 weeks from the day of assignment of tasks.
4. Each team keeps all related files in its own folder. To submit the project, it is necessary to send the final files via email [a.stavytskyy@knu.ua](mailto:a.stavytskyy@knu.ua). The final files must include: an electronic version of the report (presentation in MS PowerPoint format<sup>1</sup>) \*. pptx , an electronic version of the model in the file of the appropriate software environment, a project report in MS Word<sup>2</sup> format, which describes the relevant justifications, the results of the scientific search with specific references, user instructions, the model, its prerequisites, relationships between objects, limitations, etc. The minimum number of processed sources over the past 5 years is 15<sup>3</sup>. The model must be described with all assumptions, formulas, analysis of results, conclusions, analysis of shortcomings. A file with the distribution of work within

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<sup>1</sup> The font size in the presentation **can not** be smaller than 24, and the number of words on one slide cannot exceed 50. If it is necessary to place additional large-sized materials, you should use the "notes" tool.

<sup>2</sup> The recommended volume of the text part of the work with all calculations is 40 thousand characters.

<sup>3</sup> Use Google Scholar for finding relevant sources.

the team is also attached. **All text will be checked for plagiarism and the use of generative text creation programs by a special program; if there is direct borrowing, the maximum score for the project will be 0 points, regardless of other performance indicators. Direct copying of AI-generated text without substantial editing is prohibited.**

5. All presentations must be made **by May 21** of the current year. During the presentation, **reading text from the screen or other media is prohibited**, the oral report must differ from what is written on the slide. Remember that the presentation reflects your professionalism and analytical thinking. When presenting a model, it is allowed to run demonstration videos to illustrate the work of the corresponding program. All team members must participate in the presentation.
6. The results of the work are evaluated according to the following criteria:
  - adherence to the approved schedule for submission of works and their presentation;
  - timeliness of submission of work;
  - correctness and completeness of coverage of the topic, its presentation;
  - **actually creative** rethinking of the topic, **analysis of SCIENTIFIC publications on the topic over the last 5 years** ;
  - quality of the constructed model, number of considered options and initial conditions, ease of use of the model;
  - compliance with the task;
  - **own approach** to analyzing the proposed topic;
  - compliance with the formatting requirements for documents and presentations.
7. The grade for team work will be put after May, 29 based on a maximum score **of 20 points**. The score will take into account the contribution of each team member based on a special algorithm.

## ***Project topics***

### **Project 1**

Develop a comprehensive model for assessing the economic feasibility of a micro-enterprise (for example, a coffee shop, a small bakery or a coworking space) transitioning to autonomous energy supply in conditions of unstable power system operation. Conduct research on the problem and propose YOUR vision of solving the following issues:

- Estimate the costs of the business due to the lack of electricity (spoiled products, lost profits, loss of customer loyalty, labor costs during downtime).
- Compare options for purchasing a gasoline/diesel generator versus installing inverter-battery systems or solar panels.
- Take into account in the model the possibility of using the "Affordable Loans 5-7-9%" program, grants for energy independence or equipment customs clearance privileges.
- Calculate the change in the payback period and operating costs in the event of a sharp jump in oil prices (and, accordingly, fuel in Ukraine) due to the escalation of the conflict in Iran and the blocking of the Strait of Hormuz (or a similar conflict in the future).

The model should show cash flows in a monthly structure for the next 5 years. The user should be able to independently change the input data: number of hours of outages per day, fuel cost, loan rate and average check size. The report should clearly indicate all assumptions (equipment efficiency, fuel consumption rates, tax implications, etc.).

### **Project 2**

Develop a game-theoretic or simulation model that explains the choice of a business entity between full tax payment, use of "optimization" schemes, and full evasion. The project should investigate how changes in the regulatory environment affect the budgets of different levels. It is necessary to propose your own modeling of the following aspects:

- Using a network of 2nd and 3rd group individual entrepreneurs instead of one legal entity in the general system.

- Modeling the benefits of minimizing the Single social contribution (SSC) and PIT compared to the risks of fines and loss of reputation.
- Analysis of transaction costs for “cash” compared to legal withdrawal of dividends.
- Determine the indifference point at which the benefits of evasion become less than the probable losses (taking into account the probability of inspection and the size of fines).

Take into account the “moral cost” of evasion and the level of trust in state institutions. Calculate how much the State Budget (VAT) and local budgets and PFs (personal income tax, personal income tax and social security contributions) lose from each scheme. Predict the change in revenues when introducing indirect methods of expenditure control or automatic exchange of tax information.

When developing the model, all assumptions used should be clearly stated (for example, the level of corruption in tax authorities or the average percentage of the cost of "cash" services).

### **Project 3**

Develop a comprehensive model for analyzing and forecasting the impact of climate change on agricultural production in Ukraine. The model should assess how temperature fluctuations, precipitation patterns, and extreme weather events influence the yield of key crops (such as wheat, corn, and sunflower), the profitability of farms of different sizes, and regional food security. Conduct research on the problem and propose YOUR vision of solving the following issues:

- Estimate how changes in average temperature, precipitation levels, and the frequency of extreme events (droughts, floods, heatwaves) affect crop yields in different regions of Ukraine.
- Compare the economic performance of farms under different adaptation strategies, such as the introduction of drought-resistant crop varieties, expansion of irrigation systems, crop diversification, and adoption of precision agriculture technologies.

- Include in the model the role of government support mechanisms (subsidies, insurance programs, investment grants) as well as war-related factors such as damaged infrastructure, mined fields, or temporary loss of cultivated land.
- Assess how climate-related yield changes may influence farmers' incomes, regional food security, and Ukraine's agricultural export potential.

The model should generate forecasts until 2035 in a quarterly structure. It should estimate impacts on agricultural production volumes, export revenues, farm profitability, and potential budget revenues from the agricultural sector. The user should be able to independently modify key input parameters such as temperature change scenarios, precipitation levels, adoption rates of new technologies, and subsidy volumes. The report should clearly state all assumptions (yield response to climate variables, irrigation efficiency, technology adoption costs, price scenarios, and war-related production constraints).

The model should rely primarily on fully open data sources, including FAOSTAT (production volumes, yields, prices, and trade statistics by regions of Ukraine) and regional agricultural statistics from the State Statistics Service of Ukraine.