


Scientific profile structure (portfolio) of potential research supervisor as participant of the International Olympiad in the Association "Global universities" on the postgraduate studies track in 2023-2024.

University	Samara National Research University
English proficiency	Advanced
Educational program and field of the educational program for which the applicant will be accepted	2.5.15. Thermal, electric rocket engines and power plants of aircraft
List of research projects of a potential supervisor	Development of computer-aided means for concept designing of aircraft engines and power plants (supervisor).
List of possible research topics	<ul style="list-style-type: none"> ● Conceptual design of hybrid power plants ● Simulation of gas turbine engine operation. ● Research of perspective configurations of aircraft engines. ● Virtual tests of a gas turbine engine.
 <p>Research supervisor: Andrey Yu. Tkachenko, PhD at Samara University</p>	Mechanics. General mechanical engineering
	Supervisor's research interests: Research and optimization of gas turbine engine workflow. Development of methods and computer-aided means for concept designing of aircraft engines and power plants.
	Research highlights: <ul style="list-style-type: none"> ● Professional, responsive and collaborative research team. ● Advanced models and methods for calculating the working process of gas turbine power plants are being developed. ● A unique platform for computer modeling of complex technical systems has been created. ● The research team is constantly involved in the implementation of research and design work. ● The results of scientific work are constantly published in scientific journals and reported at leading professional conferences.
	Supervisor's specific requirements: None
	Supervisor's main publications:

	<ol style="list-style-type: none"> 1. Omar Kh. , Kuzmichev V. S. , Tkachenko A.Y. Optimization the main thermodynamics parameters of the aviation turbofan engines with heat recovery in the aircraft system // Journal of Physics: Conference Series. — 2021. — Vol. 1745. Issue 1. 2. Omar Kh. , Kuzmichev V. S. , Tkachenko A.Y. Thermodynamic parameters optimization of an aviation three-shaft turbofan engine with an intercooler and a recuperator under flight condition // Journal of Physics: Conference Series. — 2021. — Vol. 1891. Issue 1. 3. Thomas Jayachandran A.V., Tkachenko A.Y., Omar Kh. etc. Performance computing of an open cycle micro gas turbine powerplant using data aided modeling and simulation // Journal of Physics: Conference Series. — 2021. — Vol. 1745. Issue 1 4. Rybakov, V.N., Kuz'michev, V.S., Tkachenko, A.Y. et al. A Method of Working Process Parameter Optimization of a Unified Engine Core and a Gas Turbine Engine Family Being Created on Its Basis. Russian Aeronautics. 61, 78–83 (2018). 5. Estimation of cooling flow rate for conceptual design stage of a gas turbine engine // Proceedings of the Institution of Mechanical Engineers, Part A: Journal of Power and Energy 2021. — Vol. 235. Issue 8. — P. 2014-2021.
	<p>Results of intellectual activity</p> <ul style="list-style-type: none"> – Development of the software for concept designing of gas turbine power plants. – Theoretical foundations of optimal workflow of aircraft and energy power plants. – Theory and mathematical models of combined cycle power plants. – Development of optimal designing methods for aircraft gas turbines. – Creation of effective design technologies of high-power gas turbines for energy power plants. – Concept designing of small-scale gas turbine engines. – Investigation of perspective technologies for advanced aviation power plants. <p>Patents:</p> <ol style="list-style-type: none"> 1. Software for thermogasodynamic calculation and analysis of gas turbine engines and power plants ASTRA-PR, patent No. 2017614042 received 13.04.2017 2 Software module for thermogasodynamic calculation of a turbojet engine for Matlab, patent No. 2018615870 received on 25.05.2018 3 Software module for thermogasodynamic calculation of a turbofan engine for Matlab, patent No. 2018615724 received on 05/22/2018 4 CAE-software ASTRA-T-1 for closed-cycle gas turbine conceptual design, patent No. 2019618046 received on 26.07.2019 5 Software module for calculating thermodynamic parameters designed for Matlab, patent No. 2020667533 7 ASTRA-5.0.t-microGTD, patent No. 2021665452 received on 09/27/2021 8 ASTRA-7, patent No. 202166888 received on 11/22/2021 9 ASTRA-8-MGTD, patent No. 2021668887 received on 11/22/2021