

Course Title (in English)

Modern Problems of Mathematical Physics

Course Title (in Russian)

Современные задачи математической физики

Lead Instructor(s)

Gavrylenko, Pavlo

Is this syllabus complete, or do you plan to edit it again before sending it to the Education Office?

The syllabus is a final draft waiting for approval (once approved the syllabus will be published on the public web-site and other systems)

Contact Person

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1. Annotation

Course Description

Course "Modern problems of mathematical physics" is a student seminar, so participants are expected to give talks based on the modern research papers. Current topic of the seminar can vary from time to time. Topics that were already covered, or can be covered in the future, are: classical integrable equations, complex curves and their theta-functions, quantum integrable models (quantum-mechanical and field-theoretical), models of statistical physics, stochastic integrability, quantum/classical duality, supersymmetric gauge theories, etc.

Course Prerequisites / Recommendations

Basic knowledge of classical/quantum mechanics and classical/quantum field theory: Lagrangian/Hamiltonian formalism, operator formalism in quantum mechanics, Gaussian integration.

2. Structure and Content

Course Academic Level	Master-level course suitable for PhD students
Number of ECTS credits	6

3. Assignments

Assignment Type	Assignment Summary
Presentation	To give a talk on some mathematical physics topic
Other	To participate in the discussions during seminars, to understand what is going on

4. Grading

Type of Assessment	Graded
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Grade Structure	Activity Type	Activity weight, %
	Attendance	70
	Presentation	30

Grading Scale

A:	86
B:	76
C:	66
D:	56
E:	46
F:	0

Attendance Requirements	Mandatory with Exceptions
<p>Students must be present for at least 90% of the school year to be considered a "regular" student.</p> <p>Students who are absent for more than 90% of the school year are considered "irregular" students and are subject to the following consequences:</p> <ul style="list-style-type: none"> Students who are absent for more than 90% of the school year are subject to suspension. Students who are absent for more than 90% of the school year are subject to expulsion. Students who are absent for more than 90% of the school year are subject to removal from the school. 	<p>Students who are absent for more than 90% of the school year are subject to suspension.</p> <p>Students who are absent for more than 90% of the school year are subject to expulsion.</p> <p>Students who are absent for more than 90% of the school year are subject to removal from the school.</p>

5. Basic Information

Course Stream	Science, Technology and Engineering (STE)
Course Term (in context of Academic Year)	Term 1 Term 2 Term 3 Term 4
Course Delivery Frequency	Every year
Students of Which Programs do You Recommend to Consider this Course as an Elective?	

Masters Programs	PhD Programs
Mathematical and Theoretical Physics	Mathematics and Mechanics

Course Tags	Math Physics
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6. Textbooks and Internet Resources

Papers	DOI or URL
A. Zabrodin, Lectures on nonlinear integrable equations and their solutions	https://arxiv.org/abs/1812.11830
Alexander Alexandrov, Anton Zabrodin, Free fermions and tau-functions	https://arxiv.org/abs/1212.6049

7. Facilities

8. Learning Outcomes

9. Assessment Criteria

Input or Upload Example(s) of Assignment 1:	
Select Assignment 1 Type	Presentation
Input Example(s) of Assignment 1 (preferable)	To give a talk on some mathematical physics topic
Assessment Criteria for Assignment 1	At least one talk
Input or Upload Example(s) of Assignment 2:	

Select Assignment 2 Type

Other

Input Example(s) of
Assignment 2 (preferable)

To participate in the discussions during seminars, to understand what is going on

Input or Upload Example(s) of Assignment 3:

Input or Upload Example(s) of Assignment 4:

Input or Upload Example(s) of Assignment 5:

10. Additional Notes