Fənnin adı: **Variasiya hesabı və optimallaşdırma üsulları**

1. Unconditional extremum problem of multivariable function.
2. Conditional extremum problem. Theorem on sufficient condition.
3. Conditional extremum problem. Theorem on the second order necessary condition.
4. Convex sets.
5. Convex functions.
6. Kuhn Tucker theorem I-III.
7. Kuhn Tucker theorem IV-VIII.
8. Linear programming problem. Mathematical formulation of the problem.
9. Linear programing. Formulation of transportation problem and its mathematical model.
10. Linear programming problem. Problem planning of production.
11. Properties of the set of solutions of linear programming problem theorems 1,3.
12. Optimality condition.
13. Properties of the set of solutions of linear programming problem theorems 2,4.
14. Method of finding of support plan.

15. Problem about Brachistochrone
16. Statement of simple problem of classical variation calculus.
17. Main lemmas of variation calculus.
18. Bolsa problem.
19. Transversality condition
20. Functional dependent on several functions.
21. Functional dependent on high order derivatives.
22. Isoperimetric problem.
23. The second variation.
24. Legendre conditions.
25. About positive definiteness of the 2^{nd} variation.
26. Jacobi condition.
27. Sufficient condition for the weak extremum
28. Fields of extremals.
29. Weierstrass function.
30. Weierstrass function, Weierstrass condition.
31. Sufficient condition for strong extremum.