**МЕТОДИЧЕСКИЕ УКАЗАНИЯ И ЗАДАНИЯ**

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| Lecture 1. The mathematical modeling physical prosesses. Introduction.  |
| EXERCISE 1 |
| Lecture 2. Mathematical modeling of atmospheric processes |
| EXERCISE 2 |
| Lecture 3. Mathematical modeling of pollution of oceans and seas. |
| EXERCISE 3 |
| Lecture 4. Mathematical modeling of short-term weather forecast. |
| EXERCISE 4 |
| Lecture 5. Mathematical modeling of tropical cyclones (tornadoes). |
| EXERCISE 5 |
| Lecture 6. Mathematical modeling of near space. |
| EXERCISE 6 |
| Lecture 7. Mathematical modeling of the hydrodynamics of aluminum electrolyzers |
| EXERCISE 7 |
| Lecture 8. Modeling the dynamics of ionospheric plasma |
| EXERCISE 8 |
| Lecture 9. Mathematical modeling of internal flows. |
| EXERCISE 9 |
| Lecture 10. Mathematical modeling of chemical processes in a confined space |
|  EXERCISE 10 |
| Lecture 11. Fractional-Step Methods for three-dimensional parabolic equation. |
|  EXERCISE 11 |
| Lecture 12. Fourier method for the three-dimensional pressure equation. |
| EXERCISE 12 |
| Lecture 13. RANS for nonstationare physical processes |
| EXERCISE 13 |
| Lecture 14. A Reynolds stress model for velocity and scalar fields. |
| EXERCISE 14 |
| Lecture 15. LES for physical processes. |
| EXERCISE 15 |