Advanced applied analysis

2 units (selection)

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Target⟩ To learn the functional analytic methods which are basic tools for mathematical sciences.

Outline⟩ This subject provides basic theory of functional analysis which is considered as linear algebra in infinite-dimensional spaces. Functional analytic approaches to phenomena described by differential equations are introduced.

Style⟩ Lecture

Relational Lecture⟩ "**Topics of Analysis for Mathematical Science**"(0.5)

Goal⟩ To apply the theory of modern analysis and recognize its significant role.

Schedule⟩
1. Differential equations and their solutions
2. Exponential of matrices 1
3. Uniqueness of solutions
4. Existence of solutions
5. Eigenvalues and eigenspaces
6. Projective representation
7. Exponential of matrices 2
8. Generalized eigenvalue problems
9. Dunford integrals
10. Holomorphic functions of matrices
11. Solution curve and stability
12. Stability of solutions
13. Ljapunov's method
14. Nonlinear case
15. Linear approximations
16. Summary

Evaluation Criteria⟩ Evaluation by the report.

Reference⟩ 『新微分方程式対話』 笠原晧司著，日本評論社

Webpage⟩ http://math9.pm.tokushima-u.ac.jp/lecture/

Contents⟩ http://cms.db.tokushima-u.ac.jp/cgi-bin/toURL?EID=216570

Contact⟩
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