

M 546 – Mathematics and Technology

Course (Catalog)

Description: This course will provide a study of the mathematics necessary for modern technologies. Technological applications will be stressed throughout. Topics include error analysis, logic, truth tables, Boolean algebra, Karnaugh maps, hexadecimal RGB codes, Cartesian mapping, and binary, octal, and hexadecimal number systems and mathematical operations in each. **Prerequisite(s): M 333 or equivalent.**

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Textbook:

Number of credits: Three

Learning Outcomes:

- Correctly apply and explain error analysis techniques, utilizing concepts from statistics, scientific notation, and dimensional analysis
 - Technology Application: Calculator “functions”
- Develop proficiency in working with binary numbers and in performing mathematical operations in base two
 - Technology Application: Computer memory
- Develop proficiency in working with octal and hexadecimal numbers and in performing mathematical operations in base eight and in base 16
 - Technology Application: Elements of coding
- Demonstrate understanding of logical operators and analyze propositions using truth tables
 - Technology Application: Logical operators and internet searches
- Perform Boolean algebra operations and analyze disjunctive normal forms using Karnaugh maps
 - Technology Application: Circuits
- Analyze color schemes using hexadecimal RGB codes and apply Cartesian mapping principles to locate pixels on various-resolution displays
 - Technology Application: Computer animation

Grading and assessment for undergraduate course:

Homework Sets	= 100 points
Midterm Exam	= 100 points
Comprehensive Final Exam	= 100 points

Grading and assessment for graduate course:

Homework Sets	= 50 points
Weekly Graduate Problem Sets	= 50 points
Midterm Exam	= 100 points
Comprehensive Final Exam	= 100 points