

1/7/2025

DATE

TEC DIVISION



REQUIRED COURSE



NEW COURSE



ELECTIVE COURSE



REVISION

Lake Land College

Course Information Form

| | | | | | | | | | | | |
|--------------------------------------|---|------------------|--|------------------------|------------------------|------|------------------------------|--------|----------|-------|-----|
| COURSE NUMBER: | APT-042 | | TITLE: (30 Characters Max) | | Applied Mathematics II | | | | | | |
| SEM CR HRS: | 2 | Lecture: | 2 | Lab: | 0 | ECH: | | 2 | | | |
| Course Level: | <input type="checkbox"/> Gen Ed / IAI <input type="checkbox"/> Baccalaureate /Non-IAI | | <input checked="" type="checkbox"/> Career/Technical <input type="checkbox"/> Dev Ed/ Not in Degree Audit | | Clinical Practicum: | 0 | Work-based Learning: | 0 | WBL ECH: | 0 | |
| COURSE PCS # | 12 - 27.0301 | | IAI Code | | N/A | | Contact Hours (Minutes/Week) | | | | |
| Repeatable (Y/N): | N | Pass/Fail (Y/N): | N | Variable Credit (Y/N): | N | Min: | Max: | 16 Wks | 100 | 8 wks | 200 |
| Prerequisites: | APT-041 | | | | | | | | | | |
| Corequisites: | None | | | | | | | | | | |
| Catalog Description: (40 Word Limit) | Offers the student an in-depth study of algebra, geometry and trigonometry including factoring, solving linear systems, volumes, areas and right triangles. | | | | | | | | | | |

| List the Major Course Segments (Units) | Contact Lecture Hours | Contact Lab Hours | Clinical Practicum | Work-based Learning |
|--|-----------------------|-------------------|--------------------|---------------------|
| Vectors | 5 | | | |
| Oblique triangles | 7 | | | |
| Linear equations | 5 | | | |
| Factoring and fractions | 11 | | | |
| Exponents and radicals | 2 | | | |
| TOTAL | 30 | 0 | 0 | 0 |

EVALUATION

| | | | | | | | |
|----------|-------------------------------------|----------|-------------------------------------|------------|-------------------------------------|--------|--------------------------|
| QUIZZES | <input checked="" type="checkbox"/> | EXAMS | <input checked="" type="checkbox"/> | ORAL PRES | <input type="checkbox"/> | PAPERS | <input type="checkbox"/> |
| LAB WORK | <input type="checkbox"/> | PROJECTS | <input type="checkbox"/> | COMP FINAL | <input checked="" type="checkbox"/> | OTHER | <input type="checkbox"/> |

COURSE MATERIALS

| | |
|---------------------|-------------------------------------|
| TITLE: | Technical Mathematics with Calculus |
| AUTHOR: | Calter |
| PUBLISHER: | John Wiley & Sons |
| VOLUME/EDITION/URL: | 6th Edition |
| COPYRIGHT DATE: | 2011 |

| MAJOR COURSE SEGMENT | HOURS | LEARNING OUTCOMES |
|----------------------------------|-------|--|
| | | <i>The student will be able to:</i> |
| Vectors | 5 | |
| Introduction to vectors | | 1. Calculate the rectangular components of a vector and determine the resultant of multiple vectors when combined. |
| Application of force vectors | | 2. Solve the missing forces or angles of concurrent forces in a plane. |
| Application of impedance vectors | | 3. Solve practical problems in which the resistance and the magnitude of the impedance are unknown. |
| Oblique Triangles | 7 | |
| Solve unknown angles | | 4. Determine the angles with a given trig function. |
| Law of Sines | | 5. Solve oblique triangles using the Law of Sines. |
| Law of Cosines | | 6. Solve oblique triangles using the Law of Cosines. |
| Linear Equations | 5 | |
| Two linear equations | | 1. Solve for two unknown values using two equations, and do the same with fractional coefficients. |
| Word problems | | 1. Write two equations to describe the word problem and solve for the unknown values. |

| | | |
|-----------------------------|----|---|
| Factoring and Fractions | 11 | |
| Common factors | | 1. Factor expressions by removing common factors and difference of two squares. |
| Factoring trinomials | | 1. Factor trinomials with leading coefficient of one or more, plus substitution method. |
| Factoring techniques | | 1. Factor by grouping, factor the perfect square trinomial, and test for factorability. |
| Simplification of fractions | | 1. Reduce fractions, convert to decimals, and cancellation from numerator and denominator. |
| Rules for using fractions | | 1. Add, subtract, multiply and divide fractions, simplify complex fractions. |
| Exponents and radicals | 2 | 1. Use the laws of exponents to simplify and combine expressions having integral exponents. |
| | 30 | |

| Outcomes* | At the successful completion of this course, students will be able to: |
|-------------------------------------|---|
| Course Outcome 1 | Resolve a vector into components and conversely combine components into a resultant vector. |
| Course Outcome 2 | Solve oblique triangles using the Law of Sines. |
| Course Outcome 3 | Solve oblique triangles using the Law of Cosines. |
| Course Outcome 4 | Write a system of equations to describe an application problem and solve those equations. |
| Course Outcome 5 | Solve fractional equations. |
| Primary Laker Learning Competency | Scientific Literacy: Students identify foundational science concepts and apply the scientific process to real-life situations. |
| Secondary Laker Learning Competency | Quantitative Literacy: Students utilize mathematical knowledge to test claims and hypotheses, perform data analysis and recognize patterns in real-life situations. |

*Course and program outcomes will be used in the software for outcomes assessment and should include at least 1 primary and 1 secondary Laker Learning Competency. Limit to 3-5.