

# Coastal Bend COLLEGE

## Administrative Master Syllabus

### Cover Sheet

**Purpose:** The Administrative Master Syllabus provides a general course description, defines the required elements of the course, and establishes a faculty-driven foundation for course assessment to ensure continuous improvement in student learning, irrespective of the course timeframe, or mode of course delivery.

Course Title:

Course Prefix and Number:

THECB Approval Number (10 digit):

Department:  Division:

Course Type: (check only one)

- Academic General Education Course (From ACGM but not a CBC Core Course)
- Academic CBC Core Course
- WECM Course (Special Topics or Unique Needs Course: Y  or N  )

Weekly Contact Hours (Lecture – Lab – External):  -  -

Course Catalog Description:

A study of the theory and operations of various types of pumps and compressors. Topics include mechanical power transmission systems including gears, v-belts, and chain drives.

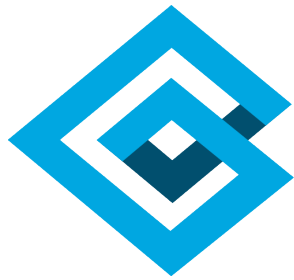
Prerequisites/Co-requisites:

**Approval:** The contents of this document have been reviewed and are found to be accurate.

Prepared by (Content Expert):  Digitally signed by Jarod Bleibdrey  
Date: 2022.09.07 13:31:59 -05'00'

Reviewed by Director or Coordinator:  Digitally signed by Jarod Bleibdrey  
Date: 2022.09.07 13:32:10 -05'00'

Approved by Dean of CTE or NAH or TGE:  Digitally signed by Jarod Bleibdrey  
Date: 2022.09.07 13:32:20 -05'00'



# Coastal Bend COLLEGE

## Master Course Syllabus

### Course Name: INMT 2303 Pumps, Compressors & Mechanical Drives

**Course Description:** A study of the theory and operations of various types of pumps and compressors. Topics include mechanical power transmission systems including gears, v-belts, and chain drives.

**Semester Hour Credit: 4**

**Lecture Hrs. per Week/Lab Hrs. per Week/External Hrs. per Week: 2/4/0**

**Curriculum Capacity:**

Face-to-Face Lab  
Online Lab  
Face-to-Face Lecture  
Online: 30  
Virtual Face-to-Face  
Interactive video (multi-locations): 30  
Hybrid  
Clinical

**Recommended enrollment threshold:**

Face-to-Face Lab  
Online Lab  
Face-to-Face Lecture  
Online: 9  
Virtual Face-to-Face  
Interactive video (multi-locations): 9  
Hybrid  
Clinical

**Online book and/or other major required materials:**

**Title:** Industrial Maintenance, Rigging Systems, Blueprint Reading, Hand Tools  
**Author:** AMATROL Inc.  
**Publisher:** <https://www.learnamatrol.com/>  
**Edition:** 2021  
**ISBN:** \*This course utilizes inclusive access.

**The Student Learning Outcomes for the course are the same regardless of modality or location.**

**Course Outcomes  
(WECM or LDACGM)**

Student Learning Outcomes – Subject Matter Specific (SLOS):

Upon successful completion of this course, students will:

1. Identify the principles involved in the operation of centrifugal and positive displacement pumps and compressors;
2. Explain the function of various components in pumps and compressors,
3. Disassemble and reassemble pumps,
4. Compressors and mechanical drives,
5. Troubleshoot pumps, compressors and mechanical drives.

**The following general education course competencies (TGE) or Marketable SCAN Skills (CTE/NAH) are addressed in this course: General education course competencies (TGE) or Marketable SCAN Skills (CTE/NAH) assessed are indicated with an asterisk \*.**

Student Learning Outcomes – Marketable SCAN Skills (SLOM):

Upon successful completion of this course, students will:

1. Demonstrate a basic understanding of Pumps, Compressors & Mechanical Drive systems operation by identifying the function of various components in pumps and compressors.
2. Employ maintenance skills for disassembling and reassembling pumps to reflect the abilities to keep the system in operative functions.
3. Analyze an operative drive arrangement to identify the components of Pumps, Compressors & Mechanical Drive systems, to perform system configuration and revision.
4. Recognize the necessary problem-solving ability to select appropriate Troubleshoot systems requirements and decision-making skills for hydraulic and pneumatic systems.

**The following program student learning outcome is assessed for this course:**

Program Learning Outcomes (PLO) as related to this course.

This course provides instructional elements in partial requirements to the following:

1. Demonstrate the appropriate use of safety equipment, devices, and procedures in the classroom and industrial environments, including workshop housekeeping, tools storage, and maintenance safety guidelines.
2. Evaluate the application of basic theoretical knowledge of Pumps, Compressors & Mechanical Drives systems to set up and execute Preventive and Corrective Maintenance procedures.
3. Understand methods of measuring motor shaft speed, calculate rotary mechanical power, the operation of a flexible jaw coupling, methods of adjusting belt tension, allowable chain sag for various applications, the function of backlash, and the alignment procedure of a sleeve coupling.

**Evaluation Methods:**

| Activity Types   | SLOS       | SLOM | PLO  | Weights (%) |
|--|------------|------|------|-------------|
| Introductory quiz and/or introductory access to Blackboard               |            |      |      | 3           |
| Periodic quizzes/practices and Mid-term assessments                      | 1, 3, 4, 5 | 1, 4 | 1, 2 | 50          |
| In-Class activities or practices   | 1, 2       | 2, 4 | 2    | 17          |
| Hands-on shop practice, online participation, and tasks submission       | 3          | 2, 3 | 3    | 15          |
| Final Assessment   | 1, 3, 4, 5 | 1, 4 | 1, 2 | 15          |
| Total:   |            |      |      | 100%        |
| **Instructor should remain within the relevant range of stated weights** |            |      |      |             |

**Course Grading:** Please see individualized instructor policies for course evaluation methods. Students will be assessed on the same measure across each discipline as per CBC guidelines.

**Major Course Assignments and/or exams counting for at least 10% of a final course grade:**

|  |
|--|
| • Periodic quizzes/practices and Mid-term assessments                |
| • In-Class activities or practices                                   |
| • Hands-on shop practice, online participation, and tasks submission |
| • Final Assessment   |

**Grade Scale:**

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| Final grades for all courses will be based in the following manner:<br>A = 90% - 100%<br>B = 80% - 89%<br>C = 70% - 79%<br>D = 60% - 69%<br>F = 59% or Below |
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**Course Subject Matter Outline:**

| <i>Material</i>  |
|--|
| <b>1 CENTRIFUGAL PUMP OPERATION</b>  |
| <b>Segment 1 - INTRODUCTION TO PUMPS</b>   |
| Objective 1 - Describe the function of a pump and give an application                            |
| Objective 2 - List two categories of pumps and give an example of each                           |
| Objective 3 - Describe two types of dynamic pumps and give an application of each                |
| Objective 4 - Describe the basic operation of a centrifugal pump                                 |
| Objective 5 - Describe the functions of basic components of a centrifugal pump system            |
| <b>Segment 2 - PUMP SAFETY AND INSTALLATION</b>  |
| Objective 6 - Describe six rules of safe dress for working with pumps                            |
| Objective 7 - Describe eight pump safety rules   |
| Objective 8 - List three methods of pump motor/shaft connections and give an application of each |
| Objective 9 - Describe how to install a centrifugal pump with a foot mount                       |

|  |   |  |
|--|---|--|
|  | <b>Segment 3 - PUMP OPERATION</b>   |  |
|  | Objective 10 - Describe the operation of a centrifugal pump with a mechanical seal                                  |  |
|  | Objective 11 - Describe the flow vs. pressure characteristics of a centrifugal pump                                 |  |
|  | Objective 12 - Describe how to perform the initial startup and operation of a centrifugal pump                      |  |
|  | Objective 13 - Describe how to start up a centrifugal pump after normal shutdown                                    |  |
|  | <b>1 Introduction to Mechanical Drive Systems</b>   |  |
|  | <b>Segment 1 - Mechanical Power Transmission Safety</b>   |  |
|  | Objective 1 - Describe the Function of a Mechanical Power Transmission System and Give an Advantage                 |  |
|  | Objective 2 - Describe Five Methods of Rotary Mechanical Power Transmission and Give an Application of Each         |  |
|  | Objective 3 - Describe Six Rules of Safe Dress for Working with Power Transmission Equipment                        |  |
|  | Objective 4 - Describe Eight Mechanical Transmission Safety Rules   |  |
|  | Objective 5 - Describe the Operation of the Lockout/Tagout System   |  |
|  | <b>Segment 2 - Machine Installation</b>   |  |
|  | Objective 6 - Describe the Function of a Foundation and Give Three Types  |  |
|  | Objective 6 - Describe the Function of a Foundation and Give Three Types  |  |
|  | Objective 7 - Describe the Function and Construction of a Bedplate  |  |
|  | Objective 8 - Describe the Function of a Spirit Level and Give an Application                                       |  |
|  | Objective 9 - Describe the Operation of a Spirit Level  |  |
|  | <b>Introduction to V-Belt Drives</b>  |  |
|  | <b>Segment 1 - Belt Drive Concepts</b>  |  |
|  | Objective 1 - Describe the Function of the Three Basic Components of a Belt Drive                                   |  |
|  | Objective 2 - Define Pitch and Explain Its Importance   |  |
|  | Objective 3 - Define the Pitch Circle, Pitch Diameter and Pitch Length of a Belt Drive and Explain Their Importance |  |
|  | <b>Segment 2 - V-Belt Operation</b>   |  |
|  | Objective 6 - List Five Types of Belt Drives and Give an Application of Each  |  |
|  | Objective 7 - List Three Types of V-Belts and Give an Application of Each   |  |
|  | Objective 8 - Describe the Operation of a Fractional Horsepower V-Belt Drive  |  |
|  | <b>5 Introduction to Chain Drives</b>   |  |
|  | <b>Segment 1 - Chain Drive Concepts</b>   |  |
|  | Objective 1 - Describe the Function of the Three Basic Components of a Chain Drive                                  |  |
|  | Objective 2 - Describe How to Calculate Sprocket Ratio and Explain Its Importance                                   |  |
|  | <b>Segment 2 - Chain Drive Operation</b>  |  |
|  | Objective 4 - List Four Types of Chains and Give an Application of Each   |  |
|  | Objective 5 - List Four Types of Roller Chain Drives and Give an Application of Each                                |  |
|  | Objective 6 - Describe the Operation of a Single-Strand Roller Chain Drive  |  |
|  | <b>Industry 4.0 Total Productive Maintenance Management Course</b>  |  |
|  | Troubleshooting Tools   |  |
|  | Troubleshooting Aids  |  |
|  | Troubleshooting Methods   |  |

### Additional Course Requirements:

Students shall be provided a supplemental class document containing, but not limited to: instructor contact and availability information, including student guidance hours and class meeting times and locations, as well as, policies related to course grading, class attendance (both in-person and online), classroom policies, assignment/submission detailed due dates, late assignment provisions, and general information on the nature and calculations of required elements for testing and other assessments.

### Class Attendance and Classroom Conduct Policies

**Attendance Policy:** Please see individualized instructor policies for attendance, which is pursuant to any related policy as outlined by the college handbook, financial aid agreements, or any other college-related understanding (e.g. athletics, organizations).

**Telephone Support:** Toll-Free: 866-722-2838 or Direct Line: 361-354-2508

### I.T. Support Blackboard

<http://coastalbend.edu/it/>

IT Help Desk  
1-361-354-2508

[helpdesk@coastalbend.edu](mailto:helpdesk@coastalbend.edu)

**Live Chat:** Fall/Spring Hours: Monday - Thursday from 9 a.m. to 4 p.m. Summer Hours: Monday – Thursday from 9 a.m. to 5 p.m.

**Tutoring Services:** Coastal Bend College is committed to the academic success of all students enrolled at the college. A variety of services, including academic support, individual tutoring sessions, group tutoring sessions, and online tutoring, are available to students depending on the availability of tutors for the subject matter requested. All tutoring is provided at no cost to current CBC students who are currently enrolled at CBC. On-demand tutoring services are accessible 24 hours a day, seven days a week through the TutorMe platform, which may be accessed through your Blackboard account. To request a tutor, please complete the online tutor request form found at <http://www.coastalbend.edu/tutoring/> to submit your request. If you have any questions about tutoring programs, you can contact to [tutoring@coastalbend.edu](mailto:tutoring@coastalbend.edu).

| Beeville   | Alice   | Kingsville   | Pleasanton   |
|--|---|--|--|
| 3800 Charco Road<br>Beeville, TX 78102<br>1-866-722-2838 | 704 Coyote Trail<br>Alice, TX 78332<br>1-866-891-2981 | 1814 Brahma Blvd.<br>Kingsville, TX<br>78363<br>1-866-262-1615 | 1411 Bensdale<br>Pleasanton, TX<br>78064<br>1-866-361-4222 |

**Grady C. Hogue Learning Resource Center (Library):** Located on the Beeville campus, the operation hours are Monday - Friday from 8:00 a.m. to 5:00 p.m.

(Summer semesters will observe the CBC campus operation hours) For locations and hours of the CBC library in Alice, Kingsville, and Pleasanton sites please visit the library web page link below.

Grady C. Hogue Learning Resource Center (Library): <http://lrc.coastalbend.edu/about>

**Financial Aid:** Resources are available for students for financial aid, work study, and veteran benefits. For additional information, visit our website at <http://coastalbend.edu/finaid> or contact us at 361-354-2238. Office hours: Monday - Friday from 8:00 a.m. to 5:00 p.m.

**ADA Statement:** No qualified individual with a disability shall, by reason of such disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of the College District, or be subjected to discrimination by the College District. Nor shall the College District exclude or otherwise deny equal services, programs, or activities to an individual because of the known disability of an individual with whom the individual is known to have a relationship or association. 42 U.S.C. 12132; 28 CFR 35.130(g). See at: [GA \(Legal\)](#)

**Students with Disabilities:** Please notify your instructor of any modification/adaptation you may require to accommodate a disability-related need. You will need to provide documentation to the Director of Accessibility Services so the most appropriate accommodations can be determined. Specialized services are available through the Office of Accessibility Services (**OAS**) (SSB 4.104, 471-6259). For more information, please email [oas@coastalbend.edu](mailto:oas@coastalbend.edu).

**Scholastic Dishonesty:** Each student is charged with notice and knowledge of the contents and provisions of Coastal Bend College's rules and regulations concerning student conduct. All students shall obey the law, show respect for properly constituted authority, and observe correct standards of conduct. Scholastic dishonesty shall constitute a violation of these rules and regulations and is punishable as prescribed by Coastal Bend College Policies FLB (Local) and FM (Local). Scholastic dishonesty shall include, but not be limited to, cheating on a test, plagiarism, and collusion. See at: [FLB \(Local\)](#) and [FM \(Local\)](#).

**Use of E-mail for Official Correspondence to Students:** All students should be familiar with the college's official email student notification policy. Students are expected to check their CBC email on a frequent and regular basis to stay current with college-related communications, recognizing that certain communications may be time-critical.

**Copyright Law and Intellectual Property Rights Policy:** Copyright is the right of an author, artist, composer or other creator of a work of authorship to control the use of his or her work by others. Protection extends to literary works, musical works, dramatic works, pantomimes and choreographic works, pictorial and graphic works, sculpture, motion pictures and other audiovisual works, sound recordings and architectural works. Generally speaking, a copyrighted work may not be reproduced by others without the copyright owner's permission. The public display or performance of copyrighted works is similarly restricted. Generally, the unauthorized reproduction, performance or distribution of a copyrighted work is copyright infringement and may subject the infringer to civil and criminal penalties. The Fair Use Doctrine outlines exceptions to this Law and is outlined in Coastal Bend College Policy, [CT \(Legal\)](#).

Coastal Bend College, its faculty, students and employees must comply with Copyright Law. Detailed information on Copyright Law and Intellectual Property Rights is available in Coastal Bend College Policy [CT \(Legal\)](#) and [CT \(Local\)](#).

Questions regarding this information should be directed to the Director of Library Services at: [library@coastalbend.edu](mailto:library@coastalbend.edu) or the Office of Marketing and Public Relations at: [socialmedia@coastalbend.edu](mailto:socialmedia@coastalbend.edu).

**Intellectual Property:** Student /Third Party Works: Rights to copyrightable or patentable works created by a student or a third party, that is, not a College District employee, shall reside with the author/ creator. Detailed information on Copyright Law and Intellectual Property Rights is available in Coastal Bend College Policy [CT \(Legal\)](#) and [CT \(Local\)](#).

Questions regarding this information should be directed to the Director of Library Services at: [library@coastalbend.edu](mailto:library@coastalbend.edu) or the Office of Marketing and Public Relations at: [socialmedia@coastalbend.edu](mailto:socialmedia@coastalbend.edu).

**NOTE:** The College website (<http://coastalbend.edu>) serves as the main source with the most current version of the Coastal Bend College Board Policies and the Coastal Bend College Catalog.

Student success is our number one priority at Coastal Bend College and we realize that prompt, effective communication (such as emails, assignment feedback, discussion boards and announcements) plays a significant role in achieving that goal. It is vitally important that you have the proper contact information for your instructor. This should include their phone number, email address, and if applicable, their office number, and office hours. **Faculty schedules can be located online at <http://coastalbend.edu/hb2504/>** If you have any problems contacting your instructor, or do not receive a prompt response to your inquiries, please contact the Dean or Division Coordinator/Program Director as soon as possible. Their contact information is provided below:

|   |  |
|---|--|
| <p style="text-align: center;"><i>Jarod Bleibdrey</i><br/><i>Dean of Career and Technical Education</i><br/><i>361-354-2339</i><br/><i>jbleibdrey@coastalbend.edu</i></p> | <p style="text-align: center;"><i>Lisa C. Bowman-Bowen, Ph.D.</i><br/><i>Associate Professor of Forensic Science &amp;</i><br/><i>Criminal Justice; Division Coordinator of</i><br/><i>Public &amp; Professional Services</i><br/><i>361-664-2981 Ext. 3005</i><br/><i>lbowman-bowen@coastalbend.edu</i></p> |
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We wish you all the best in your education and encourage you to contact us if you have any questions or concerns.

Keeping student success in sight, faculty in each of the courses will review the course information, including specific reading schedules, assignments, and testing information, with students during the first week of class.

Additionally, the course information will be posted to Blackboard.

***This Master syllabus is subject to change due to unforeseen circumstances.***