EXHIBIT B

EXHIBIT B

BOARD OF TRUSTEES

Bylaw, Policy, and Curriculum Committee Agenda Items

To: Board of Trustees

From: Office of the President

Date: February 15, 2024

The following Bylaw, Policy, and Curriculum Committee items are recommended to the Ocean County College Board of Trustees for approval at its meeting on **Thursday, February 22, 2024**:

1. Recommend approval of the following items as accepted by the College Senate at its meeting on February 1, 2021:

   a. Revised Program

      1) Associate in Science Degree, Engineering **(Exhibit B-1)**

   b. New Courses

      1) ENGR 103, Engineering First Year Experience and Fundamentals **(Exhibit B-2)**
      2) ENGR 295, Engineering Product Development and Prototyping **(Exhibit B-3)**

   c. Revised Courses

      1) ENGR 124, Engineering Analysis **(Exhibit B-4)**
      2) ENGR 225, Strength and Mechanics of Materials **(Exhibit B-5)**
      3) ENGR 251, Electrical Engineering I **(Exhibit B-6)**

2. Recommend the temporary suspension of Policy #8600, Campus Safety and Security, Alcohol Substance Abuse, for the Ocean County College Foundation Scholarship Celebration on Friday, June 28, 2024, on the Ocean County College Campus Mall from 6:00 p.m. to 10:00 p.m.

EXHIBIT B-1

EXHIBIT B - 1

Date Submitted: 12/05/23 1:33 pm

Viewing: AS.ENGR : Engineering, Associate in Science

Last approved: 04/10/23 11:57 am

Last edit: 02/01/24 4:11 pm

Changes proposed by: Pamela Bogdan (pbogdan)

Catalog Pages Using this Program	Engineering, Associate in Science

Program Type	Associate of Science (AS)
Program Title	Engineering, Associate in Science
Academic School	Science, Technology, Engineering, Mathematics
Effective Catalog Year	2024-2025
Program Code	AS.ENGR
CIP Code	140101 - Engineering, General.

Program Description

In Workflow

1. **STEM Academic Administrator**
2. **STEM Dean**
3. **Executive Director of Curriculum and Program Development**
4. **Curriculum Committee Chair**
5. **Senate Chair**
6. **Vice President of Academic Affairs**
7. President's Leadership Team Chair
8. President
9. Board of Trustees Chair
10. Academic Administrator for Programs

Approval Path

1. 12/12/23 1:55 pm Carolyn Showalter (cshowalter):

EXHIBIT B - 1

Approved for STEM Academic Administrator

2. 12/13/23 8:40 am Susan O'Connor (soconnor): Approved for STEM Dean
3. 01/08/24 11:45 am Susan O'Connor (soconnor): Approved for Executive Director of Curriculum and Program Development
4. 01/19/24 12:03 pm Caroline Brittain (cbrittain): Approved for Curriculum Committee Chair
5. 02/01/24 4:54 pm Donna Rosinski-Kauz (drosinski-kauz): Approved for Senate Chair

History

EXHIBIT B - 1

1. Jan 26, 2021 by Susan O'Connor (soconnor)
2. Apr 7, 2022 by Pamela Bogdan (pbogdan)
3. Jun 22, 2022 by Susan O'Connor (soconnor)
4. Apr 10, 2023 by Susan O'Connor (soconnor)

The Associate in Science Engineering degree program is designed to prepare engineering students to successfully transfer to baccalaureate engineering programs in the following areas: Biomechanical, Civil/Construction, Electrical, Industrial, Mechanical or General Engineering. Participants in the associate program will enroll in science, mathematics, engineering, and engineering technology courses that provide serious students with the knowledge and background necessary to take upper level courses in their chosen field of study as well as prepare them to participate in experiential learning opportunities in industry.

Program Objectives

Program Goals		**Program goals**
	PG1	n/a

Program Learning Outcomes		**Students who successfully complete this program will be able to:**
	PLO1	Perform analysis of engineering problems starting with establishing design concepts and ending with providing multiple and sustainable solutions to

EXHIBIT B - 1

	Students who successfully complete this program will be able to:
	engineering problems.
PLO2	Interpret, translate, and analyze physical problems using mathematical tools, scientific theory, engineering and technical knowledge, and industry practices.
PLO3	Use teamwork and organizational skills in carrying out design and problem-solving projects.
PLO4	Present technical information in oral, written, and graphic form.
PLO5	Display creative and critical thinking in connection with engineering applications.
PLO6	Communicate effectively using specialized engineering terminologies through reading, listening, speaking, and writing.
PLO7	Solve problems by collecting, organizing, and evaluating information and utilizing powerful engineering tools.
PLO8	Develop an understanding of technology and its impact on the three key aspects of sustainability: social, economic, and environmental.

Learning Outcomes Display (show only)

Course Code	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8
				FirstSemester				
ENGL 151								
ENGR 181	Project Presentation	Project Presentation	Project Presentation	Project Presentation				
CSIT 124								

EXHIBIT B - 1

Course Code	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8
CHEM 181								
SecondSemester								
ENGL 152								
MATH 265								
PHYS 281								
ThirdSemester								
MATH 266								
PHYS 282								
FourthSemester								
MATH 267								
CHEM 182								
CSIT 176								
MATH 275								
MATH 281								
PHYS 283								
CHEM 182								

EXHIBIT B - 1

Course Code	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8
CSIT 176								
MATH 275								
MATH 281								
PHYS 283								
FirstSemester								
ENGL 151								
ENGR 181	Project Presentation	Project Presentation	Project Presentation	Project Presentation				
CSIT 124								
CHEM 181								
SecondSemester								
ENGL 152								
MATH 265								
PHYS 281								
ThirdSemester								
MATH 266								
PHYS 282								

EXHIBIT B - 1

Course Code	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8
				FourthSemester				
MATH 267								

Required Qualifications

Plan of Study Grid

First Semester		Credit Hours
ENGL 151	English I	3
ENGR 181	Graphics for Engineers (Foundational Course)	2
CSIT 124	Introduction to Programming	3
or CSIT 163	or Introduction to Programming Using C++	
or CSIT 165	or Programming I	
CHEM 181	General Chemistry I	4
~~Any STSC - Student Success Seminar course [1]~~		~~2~~
ENGR 103 Engineering First Year Experience and Fundamentals [1]		3
	Credit Hours	15
Second Semester		
ENGL 152	English II	3
MATH 265	Calculus I (Students should take this course in the first semester if eligible. Please see advisor to upated schedule.)	4
PHYS 281	General Physics I	4
Humanities Gen. Ed. Requirement		3
	Credit Hours	14
Third Semester		
MATH 266	Calculus II	4
PHYS 282	General Physics II	4
Any ENGR Engineering course(s) [2]		6
Humanities or Social Science Gen. Ed. Requirement		3
	Credit Hours	17

EXHIBIT B - 1

Fourth Semester		
MATH 267	Calculus III	4
Any ENGR Engineering course(s) [2]		3
Engineering Technology/STEM Electives [2]		4
Social Science Gen. Ed. Requirement		3
	Credit Hours	14
	Total Credit Hours	60

Engineering Technology/STEM Electives

Any ENGT Engineering Technology course(s)		
CHEM 182	General Chemistry II	4
CSIT 176	Computer Organization & Architecture	3
MATH 275	Linear Algebra	3
MATH 281	Differential Equations	4
PHYS 283	General Physics III	4

[1] Students transferring into the program from other majors may use any STSC course for this requirement, if it has already been complete upon transfer into the AS.ENGR degree program. If this option is chosen, they must fulfill the 60 cr requirement for the AS.ENGR degree through ENGR or ENGT course credits.

[2] Students should select electives relevant to their planned Engineering Bachelor's Degree concentration.

Degree Requirements Breakdown

GCOM

Course Code & Title	Credits
ENGL 151	3
ENGL 152	3

EXHIBIT B - 1

GHUM

Course Code & Title	Credits
GEN ED HUMN	3

GSOC

Course Code & Title	Credits
GEN ED SOCIAL SCIENCE	3

GSOC/ GHUM

Course Code & Title	Credits
GEN ED HUMN OR SOCIAL SCIENCE	3

GMAT/ GSCI/ GTEC

Course Code & Title	Credits
CSIT 124 or CSIT 163 OR 165	3
MATH 265	4
CHEM 181	4

General Education

Course Code & Title	Credits
MATH 266	4
PHYS 281	4

Concentration Courses

Course Code & Title	Credits
ENGR 181	2
ENGR ELECTIVE	9 ~~10~~
ENGT - STEM ELECTIVES	4
ENGR 103 ~~STSC 160~~	3 ~~2~~

Elective Courses

Course Code & Title	Credits
MATH 267	4

EXHIBIT B - 1

Course Code & Title	Credits
PHYS 282	4

Board Approval

History of Board approval dates

Board of Trustees Approval Date: January 24, 2005

Board of Trustees Approval Date: August 27, 2007

Board of Trustees Approval Date: July 28, 2008

Board of Trustees Approval Date: December 1, 2008

Board of Trustees Approval Date: August 24, 2009

Board of Trustees Approval Date: November 2, 2009

Board of Trustees Approval Date: December 6, 2010

Board of Trustees Approval Date: August 27, 2012

Board of Trustees Approval Date: August 26, 2013

Board of Trustees Approval Date: April 28, 2014

Board of Trustees Approval Date: May 26, 2015

Board of Trustees Approval Date: February 28, 2019

Board of Trustees Approval Date: May 29, 2019

EXHIBIT B - 1

Board of Trustees Approval Date: March 24, 2022 ~~May 30, 2019~~

Board Approved in batch on March ~~March~~ 16, 2023 (STSC update - used admin save since there were so many programs being revised at once for the same change).

Reviewer
Comments

Key: 19

EXHIBIT B-2

EXHIBIT B - 2

Course Change Request

New Course Proposal

Date Submitted: 12/05/23 1:06 pm

Viewing: **ENGR 103 : Engineering First Year Experience and Fundamentals**

Last edit: 12/13/23 8:49 am

Changes proposed by: Pamela Bogdan (pbogdan)

Programs referencing this course	AS.ENGR: Engineering, Associate in Science
Learning Outcomes Display (show only)	

1. Course Information

Subject	ENGR - Engineering
School	Science, Technology, Engineering, Mathematics
Course Title	Engineering First Year Experience and Fundamentals

2. Hours

Semester Hours	3
Lecture	2
Lab	2
Practicum	0

3. Catalog Description

For display in the online catalog	This course provides an introduction to the practice of engineering through authentic, multidisciplinary problems and projects and addresses issues related to a successful college life. Students in this course will participate in service learning projects that will lay the foundation for careers in Engineering that create a better and more sustainable world.

4. Requisites

Prerequisites

In Workflow

1. STEM Academic Administrator
2. STEM Dean
3. Executive Director of Curriculum and Program Development
4. Curriculum Committee Chair
5. Senate Chair
6. Vice President of Academic Affairs
7. President's Leadership Team Chair
8. President
9. Board of Trustees Chair
10. STEM Academic Administrator
11. Colleague

Approval Path

1. 12/12/23 1:26 pm Carolyn Showalter (cshowalter): Approved for STEM Academic Administrator
2. 12/13/23 8:49 am Susan O'Connor (soconnor): Approved for STEM Dean
3. 01/08/24 11:50 am Susan O'Connor (soconnor): Approved for Executive Director

EXHIBIT B - 2

Corequisites

of Curriculum and Program Development
4. 01/19/24 12:03 pm Caroline Brittain (cbrittain): Approved for Curriculum Committee Chair

5. Course Type

Course Type for Perkins Reporting	vocational (approved for Perkins funding)

6. Justification

Describe the need for this course	Most 4-year engineering programs have both a First Year Experience (Student Success) course and an Introduction to Engineering course. This course blends those two courses together in a contextualized manner to provide the most efficient course load for students in the OCC AS.ENGR program.

7. General Education

Will the college submit this course to the statewide General Education Coordinating Committee for approval as a course, which satisfies a general education requirement?

No

If the course does not satisfy a general education requirement, which of the following does it satisfy:

Program-specific requirement

8. Consistency with the Vision and Mission Statements, the Academic Master Plan, and the strategic initiatives of the College

Please describe how this course is consistent with Ocean County College's current Vision Statement, Mission Statement, Academic Master Plan, and the strategic initiatives of the College:

	Add item
1	Empower students to learn, engage and achieve - 1.3 Improve student persistence, completion, and career attainment.
2	Optimize and expand enrollment of all learners - 2.3 Provide relevant programs to foster workforce development.

9. Related Courses at Other Institutions

Comparable Courses at NJ Community Colleges

Institution	Brookdale CC
Course Title	Introduction to Engineering Credits: 1
Course Number	ENGI105 -
Number of Credits	1

EXHIBIT B - 2

Number of Credits 1

Comments

Institution	Mercer County CC
Course Title	Introduction to Engineering
Course Number	CIV 105
Number of Credits	1
Comments	

Institution	Camden County College
Course Title	Introduction to Engineering
Course Number	EGR-101
Number of Credits	2
Comments	

Transferability of Course

	Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
Georgian Court University			Unable to determine status
Kean University			Unable to determine status
Monmouth University	ENGR 101 Introduction to Engineering I, ENGR 101 Introduction to Engineering II	Major	
Rowan University	First Year Clinic 1 (ENGR 01.101), • First Year Clinic 2 (ENGR 01.102)	Major	
Rutgers - New Brunswick, Mason Gross School of the	14:440:100 Introduction to	Major	

EXHIBIT B - 2

Arts	Engineering , • 14:440:107 Methods of Inquiry for Engineers		
Stockton University	Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
			Unable to determine status

If not transferable to any institution, explain:

10. Course Learning Outcomes

Learning Outcomes

	Students who successfully complete this course will be able to:
CLO1	Utilize written and oral communication to discover, develop, and articulate ideas and viewpoints both in general and within an Engineering lab context.
CLO2	Apply higher order thinking skills in making decisions about responsible behavior inside and outside the classroom, and specifically in the context of ethical situations in Engineering.
CLO3	Apply civic knowledge both locally and globally to evaluate the value of multiple perspectives and cultures, especially as that impacts the overall Engineering process and methodology.
CLO4	Demonstrate critical thinking skills as they actively engage in a critical thinking and information literacy project specifically through an Engineering design project and lab activities.
CLO5	Apply academic skills (i.e. motivation, time management, SMART goal setting and prioritization, note-taking, and test preparation) to their Engineering courses and learning experiences and extrapolate them into professional skills for a career in Engineering
CLO6	Effectively and efficiently use the technological services of the OCC community, including College Portal, Learning Management System (LMS), and online Advising and Registration systems.
CLO7	Analyze issues that interconnect society and educational success by participating in an Engineering-centric service learning project that utilizes the engineering design process.
CLO8	Apply financial analysis methods in both personal and professional Engineering contexts.

11. Topical Outline

(include as many themes/skills as needed)

	Major Themes/ Skills	Assignments (Recommended but not limited to)	Assessments (Recommended but not limited to)	Course Learning Outcome(s)
TO1	Student Success Foundations: - OCC Resources - Motivation - Time Management - SMART Goal Setting - Note Taking, Reading & Testing Strategies - Health and Wellness - Personal Finances	Discussions, Activities, Projects	Discussions, Activities, Projects	CL01, CL05, CL06, CL07, CL08
TO2	Preparing for an Engineering Career - Engineering Ethics Career Exploration - Resume Writing / LinkedIn Profile - Professional Skills - On Site Visit - Academic Plan for Completing AS & BS degrees - General Engineering Knowledge/Skills: Engineering Variables and Metrics, Computational Tools, Technical Communications, Applied Mathematics, Materials, Engineering Economics, Probability and Statistics, Applied Physics and Chemistry - Application of Skills and Knowledge within the Engineering Design Process	Discussions, Activities, Projects, Field Trips	Discussions, Activities, Projects	ALL

12. Methods of Instruction

In the structuring of this course, what major methods of instruction will be utilized?	o Small group discussions o Group activities o Specialized workshops and presentations: career project, financial literacy, academic advising, and leadership o Service Learning Project o Collaborative Learning o Use of student writing assignments that include a series of discovery statements, personal journals, essay examinations, and a final research and development project. o Lectures o Information Literacy selected article o Labs: opportunities for technical discovery and oral and written presentations of Engineering analysis and design o Individual & Group Engineering design projects

13. General Education Goals Addressed by this Course (this section is to fulfill state requirements)

Information

EXHIBIT B - 2

Communication-Written and Oral Yes

Related Course Learning Outcome CL01

Related Outline Component ALL

Assessment of General Education Goal (Recommended but not limited to) Discussions, Activities, Projects

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Quantitative Knowledge and Skills Yes

Related Course Learning Outcome CL07

Related Outline Component T02

Assessment of General Education Goal (Recommended but not limited to) Discussions, Activities, Projects

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Scientific Knowledge and Reasoning

Technological Competency

Information Literacy Yes

Related Course Learning Outcome CL04

Related Outline Component ALL

Assessment of General Education Goal (Recommended but not limited to) Discussions, Activities, Projects

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Society and Human Behavior Yes

Related Course Learning Outcome CL03

Related Outline Component T02

Assessment of General Education Goal (Recommended but not limited to) Discussions, Activities, Projects

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EXHIBIT B - 2

Humanistic Perspective

Historical Perspective

Global and Cultural Awareness Yes

Related Course Learning Outcome CL03

Related Outline Component T02

Assessment of General Education Goal (Recommended but not limited to) Discussions, Activities, Projects

---

Ethical Reasoning and Action Yes

Related Course Learning Outcome CL02

Related Outline Component T02

Assessment of General Education Goal (Recommended but not limited to) Discussions, Activities, Projects

---

Independent/Critical Thinking Yes

Related Course Learning Outcome All

Related Outline Component All

Assessment of General Education Goal (Recommended but not limited to) Discussions, Activities, Projects

14. Needs

Instructional Materials (text etc.):	This course will utilize both a Engineering Fundamentals textbook (includes both FYE and engineering Topics) and generic FYE materials. This course also requires an on-site visit for career exploration. Each semester this course utilizes the OCC vans for at least one trip.
Technology Needs:	This course utilizes all Engineering & Industrial/Technical Studies program lab resources to provide students with a general overview of future courses.
Human Resource Needs (Presently	Faculty is already hired for this course.

EXHIBIT B - 2

Employed vs. New Faculty):	
Facility Needs:	This course is fully staffed
Library needs:	This course includes a field trip to the library.

15. Grade Determinants

The final grade in the course will be the cumulative grade based on the following letter grades or their numerical equivalents for the course assignments and examinations

A: Excellent

B+: Very Good

B: Good

C+: Above Average

C: Average

D: Below Average

F: Failure

I: Incomplete

R: Audit

For more detailed information on the Ocean County College grading system, please see Policy #5154.

Reviewer Comments	**Susan O'Connor (soconnor) (12/13/23 8:49 am):** I updated the courses number to I)# as requested. For the 4-year transfer section, I removed the unable to determine status for the 3 courses that had courses listed. I added that they are major courses. Need course fee - emailed Cindy on 12/13/23

Key: 2202

EXHIBIT B-3

EXHIBIT B - 3

New Course Proposal

Date Submitted: 12/05/23 1:14 pm

Viewing: ENGR 295 : Engineering Product Development and Prototyping

Last edit: 02/01/24 4:12 pm

Changes proposed by: Pamela Bogdan (pbogdan)

Learning Outcomes
Display (show only)

1. Course Information

Subject	ENGR - Engineering
School	Science, Technology, Engineering, Mathematics
Course Title	Engineering Product Development and Prototyping

2. Hours

Semester Hours	4
Lecture	2
Lab	4
Practicum	0

3. Catalog Description

In Workflow

1. STEM Academic Administrator
2. STEM Dean
3. Executive Director of Curriculum and Program Development
4. Curriculum Committee Chair
5. Senate Chair
6. Vice President of Academic Affairs
7. President's Leadership Team Chair
8. President
9. Board of Trustees Chair
10. STEM Academic Administrator
11. Colleague

Approval Path

1. 12/12/23 1:40 pm Carolyn Showalter (cshowalter):

EXHIBIT B - 3

For display in the online catalog	This course introduces students to the fundamentals of technical product development and prototyping. Students in this course will pursue the evolution of their product concept through various phases of prototyping and formal testing, as they apply the engineering design process. While refining their product concept students will apply the fundamentals of Intuit D4d (Design for Delight), 3D CAD, various manufacturing techniques project management fundamentals and formal testing.

4. Requisites

Prerequisites	ENGR 181
Corequisites	

5. Course Type

Course Type for Perkins Reporting	vocational (approved for Perkins funding)

6. Justification

Describe the need for this course	This course provides students with the opportunity to explore product development and design. Many 4-year engineering programs require applied engineering courses where student execute the engineering design process to create real products and prototypes. For example the Rowan University Sophomore Clinic I & II. Creating this course will cause an update to ENGR 198, which will now be titled 3D CAD Design and Analysis. The revised ENGR 198 will allow for embedded courses to teach a more simplified 3D CAD course.

7. General Education

Approved for STEM Academic Administrator

2. 12/13/23 8:53 am Susan O'Connor (soconnor): Approved for STEM Dean
3. 01/08/24 11:51 am Susan O'Connor (soconnor): Approved for Executive Director of Curriculum and Program Development
4. 01/19/24 12:03 pm Caroline Brittain (cbrittain): Approved for Curriculum Committee Chair
5. 02/01/24 4:57 pm Donna Rosinski-Kauz (drosinski-kauz): Approved for Senate Chair

EXHIBIT B - 3

Will the college submit this course to the statewide General Education Coordinating Committee for approval as a course, which satisfies a general education requirement?

No

If the course does not satisfy a general education requirement, which of the following does it satisfy:

Elective

8. Consistency with the Vision and Mission Statements, the Academic Master Plan, and the strategic initiatives of the College

Please describe how this course is consistent with Ocean County College's current Vision Statement, Mission Statement, Academic Master Plan, and the strategic initiatives of the College:

	Add item
1	Empower students to learn, engage, and achieve - 1.1 Enhance Student Learning
2	Optimize and expand enrollment of all learners - 2.3 Provide relevant programs to foster workforce development

9. Related Courses at Other Institutions

Comparable Courses at NJ Community Colleges

Institution	
Course Title	3-D Modeling / 3-D Printing
Course Number	DRA 218 -
Number of Credits	3

EXHIBIT B - 3

Comments	This course addresses the design and initial protoyping only of ENGR 295

Transferability of Course

	Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
Georgian Court University			Unable to determine status
Kean University			Unable to determine status
Monmouth University			Unable to determine status
Rowan University			Unable to determine status
Rutgers - New Brunswick, Mason Gross School of the Arts			Unable to determine status
Stockton University			Unable to determine status

If not transferable to any institution, explain:

10. Course Learning Outcomes

Learning Outcomes

	Students who successfully complete this course will be able to:
CLO1	Create an initial product concept based on the principles of the Intuit D4D (Design for Delight) methodology.
CLO2	Design various prototypes using parametric modeling (3D CAD) tools and techniques.
CLO3	Predict user response to product using statistically methods.
CLO4	Build various prototypes to evaluate both product aesthetics and functionality.
CLO5	Construct formal test plans to verify compliance of prototypes with product goals.
CLO6	Apply fundamental project management techniques to ensure the success of individual and group projects.

11. Topical Outline

(include as many themes/skills as needed)

	Major Themes/ Skills	Assignments (Recommended but not limited to)	Assessments (Recommended but not limited to)	Course Learning Outcome(s)
TO1	D4D Basics & Methods - Deep Customer Empathy - Go Broad to Narrow - Rapid Experiments with Customers	Discussions, Activities, Projects	Discussions, Activities, Projects	CL01
TO2	Parametric Modeling and Analysis - Modeling - Formatting	Discussions, Activities, Projects	Discussions, Activities, Projects	CL02

	Major Themes/ Skills	Assignments (Recommended but not limited to)	Assessments (Recommended but not limited to)	Course Learning Outcome(s)
	- Analysis -Export to Computer Aided Manufacturing			
TO3	Manufacturing Techniques & Safety - 3D printing - CNC - Vacuum Molding - Injecting Molding - Hand/Power Tools	Activities, Projects	Activities, Projects	CL04
TO4	Testing and Verification - Qualitative Evaluation Methods - Quantitative Evaluation Methods	Discussions, Activities, Projects	Discussions, Activities, Projects	CL03, CL05
TO5	Prototyping - Conceptual Prototype - Virtual Prototype - "Frankenstein" Prototype - Final Product Prototype	Presentations, Projects	Presentations, Projects	ALL

12. Methods of Instruction

In the structuring of this course, what major methods of instruction will be utilized?	Lectures, discussions, projects, activities and on-line assignments.

EXHIBIT B - 3

13. General Education Goals Addressed by this Course (this section is to fulfill state requirements)

Information

Communication-Written and Oral

Quantitative Knowledge and Skills Yes

Related Course Learning Outcome CL03

Related Outline Component T04, T05

Assessment of General Education Goal (Recommended but not limited to)
Discussions, Activities, Projects, Presentations

Scientific Knowledge and Reasoning

Technological Competency

Information Literacy

Society and Human Behavior

Humanistic Perspective

Historical Perspective

Global and Cultural Awareness

Ethical Reasoning and Action

Independent/Critical Thinking	Yes
Related Course Learning Outcome	ALL
Related Outline Component	ALL

Assessment of General Education Goal (Recommended but not limited to)
Discussions, Activities, Projects, Presentations

14. Needs

Instructional Materials (text etc.):	Textbook is already selected
Technology Needs:	Continue to expand manufacturing methods, we would also like to provide a number of options for the parametric modeling tool to allow students be ready for any option selected in their 4-year institution and career (we currently have Autodesk Inventor and Autodesk Fusion 360. Would like to add (has an annual fee) SolidWorks (largest markestshare) and Creo (used for biomechanical applications)

EXHIBIT B - 3

Human Resource Needs (Presently Employed vs. New Faculty):	Faculty is already available to teach this course.
Facility Needs:	computer lab or cart and manufacturing equipment.
Library needs:	as needed for student research.

15. Grade Determinants

The final grade in the course will be the cumulative grade based on the following letter grades or their numerical equivalents for the course assignments and examinations

A: Excellent

B+: Very Good

B: Good

C+: Above Average

C: Average

D: Below Average

F: Failure

I: Incomplete

R: Audit

For more detailed information on the Ocean County College grading system, please see Policy #5154.

Reviewer Comments	**Susan O'Connor (soconnor) (12/13/23 8:53 am):** Added course number - updated transfer section a little - asked Cindy for course fee on 12/13/23

EXHIBIT B - 3

Caroline Brittain (cbrittain) (01/19/24 12:02 pm): Removed transferability information and updated all to "unable to determine" per curriculum committee discussion on 1/11/24.

Key: 2293

EXHIBIT B-4

EXHIBIT B - 4

Course Change Request

Date Submitted: 12/05/23 12:58 pm

Viewing: **ENGR 124 : Engineering Analysis**

Last approved: 07/30/21 4:00 am

Last edit: 12/05/23 12:58 pm

Changes proposed by: Pamela Bogdan (pbogdan)

Catalog Pages referencing this course	Engineering (ENGR)
Learning Outcomes Display (show only)	

1. Course Information

Subject	ENGR - Engineering
School	Science, Technology, Engineering, Mathematics
Course Title	Engineering Analysis

2. Hours

Semester Hours	3.00000
Lecture	3
Lab	0
Practicum	0

3. Catalog Description

For display in the online catalog	This course is an application of the methods of mathematical analysis, algorithm design and data visualization to the solution of engineering problems using computational programs such as MatLab. Programs to solve real-life engineering problems will be written using a high-level programming language. Additional software packages will be investigated for use in problem solving.

4. Requisites

Prerequisites	MATH 265

In Workflow

1. STEM Academic Administrator
2. STEM Dean
3. Executive Director of Curriculum and Program Development
4. Curriculum Committee Chair
5. Senate Chair
6. Vice President of Academic Affairs
7. President's Leadership Team Chair
8. President
9. Board of Trustees Chair
10. STEM Academic Administrator
11. Colleague

Approval Path

1. 12/12/23 1:48 pm Carolyn Showalter (cshowalter): Approved for STEM Academic Administrator
2. 12/13/23 8:43 am Susan O'Connor (soconnor): Approved for STEM Dean
3. 01/08/24 11:50 am Susan O'Connor (soconnor): Approved for Executive Director of Curriculum and

EXHIBIT B - 4

Corequisites	MATH 266

5. Course Type

Course Type for Perkins Reporting	vocational (approved for Perkins funding)

6. Justification

Describe the need for this course	All engineering programs require a course in engineering problem solving, using either a high-level programming language or application specific software.

7. General Education

Will the college submit this course to the statewide General Education Coordinating Committee for approval as a course, which satisfies a general education requirement?

No

If the course does not satisfy a general education requirement, which of the following does it satisfy:

Elective ~~Program-specific requirement~~

8. Consistency with the Vision and Mission Statements, the Academic Master Plan, and the strategic initiatives of the College

Please describe how this course is consistent with Ocean County College's current Vision Statement, Mission Statement, Academic Master Plan, and the strategic initiatives of the College:

	Add item
1	Cultivating a technologically progressive and entrepreneurial spirit (Mission Statement)
2	Deliver Innovative Curricula Programs and Assess Current Programs - Develop both transfer and vocational programs (Academic Master Plan)

9. Related Courses at Other Institutions

Comparable Courses at NJ Community Colleges

Institution	Brookdale CC
Course Title	Engineering Problem Solving
Course Number	ENGI 103
Number of Credits	3
Comments	

of Curriculum and Program Development
4. 01/19/24 12:04 pm Caroline Brittain (cbrittain): Approved for Curriculum Committee Chair

History
1. Jul 30, 2021 by Susan O'Connor (soconnor)

EXHIBIT B - 4

Comments

Institution	Essex County College
Course Title	
Course Number	CSC 112
Number of Credits	
Comments	

Institution	Middlesex County College
Course Title	
Course Number	ENR 106
Number of Credits	
Comments	

Transferability of Course

	Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
Georgian Court University		Elective	
Kean University	STME 1500 INTRODUCTION TO PROGRAMMING IN SCIENCE AND ENGINEERING (3cr	Elective	
Monmouth University		Elective	
Rowan University	CS101 Computer Programming & Problem Solving (2 cr)	Major	
Rutgers - New Brunswick, Mason Gross School of the Arts	14:440:127 Introduction to Computers for Engineers (3 cr)	Elective	

Stockton University	Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
			Will not transfer

If not transferable to any institution, explain:

10. Course Learning Outcomes

Learning Outcomes

	Students who successfully complete this course will be able to:
CLO1	Create an algorithm for a specific problem.
CLO2	Create a flowchart from the algorithm.
CLO3	Use software programming constructs and functionality to convert the flowchart into a written program or script to automate engineering analysis techniques.
CLO4	Use software testing and troubleshooting techniques.
CLO5	Present results of analysis both numerically and graphically

11. Topical Outline

(Include as many themes/skills as needed)

	Major Themes/ Skills	Assignments (Recommended but not limited to)	Assessments (Recommended but not limited to)	Course Learning Outcome(s)
TO1	Software Programming (MatLab): Logic Development, Algorithms & Flowcharts, Programming Reading, discussion, projects Quiz, exam, individual and group project 8: all Basics & Constructs and Formatted I/O & Plotting	Reading, discussion, projects	Quiz, exam, individual and group project	All
TO2	Software Testing & Troubleshooting Techniques	Reading, discussion, projects	Quiz, exam, individual and group project	CLO4
TO3	Software Programming for Engineering Applications - Functions & Vectors	Reading, discussion, projects	Quiz, exam, individual and group project	ALL

EXHIBIT B - 4

	Functions & Vectors, - Computing Integrals, Differential Equations & Linear Algebra			
TO4	Engineering Design	Reading, discussion, projects	Quiz, exam, individual and group project	ALL
TO5	Interpreting & Confirming Results	Reading, discussion, projects	Quiz, exam, individual and group project	CLO5
TO6	Other Computational Programs	Reading, discussion, projects	Quiz, exam, individual and group project	CLO3

12. Methods of Instruction

In the structuring of this course, what major methods of instruction will be utilized? Lecture, programming activities and discussion

13. General Education Goals Addressed by this Course (this section is to fulfill state requirements)

Information

Communication-Written and Oral

Quantitative Knowledge and Skills Yes

Related Course Learning Outcome All

Related Outline Component TO1, TO3 - TO6

Assessment of General Education Goal (Recommended but not limited to)
Quiz, exam, individual and group project

Scientific Knowledge and Reasoning

Technological Competency

EXHIBIT B - 4

Information Literacy

Society and Human Behavior

Humanistic Perspective

Historical Perspective

Global and Cultural Awareness

Ethical Reasoning and Action

Independent/Critical Thinking	Yes
Related Course Learning Outcome	ALL
Related Outline Component	ALL

Assessment of General Education Goal (Recommended but not limited to)
Quiz, exam, individual and group project

14. Needs

Instructional Materials (text etc.):	Text: An appropriate text or open educational resource will be selected. Contact the department for current adoptions.
Technology Needs:	Computers and MatLab Software (already installed, renewable license), additional software (Excel, Open Source Software: R, GNU Octave)_____
Human Resource Needs (Presently Employed vs. New Faculty):	Presently employed faculty can teach this course._____
Facility Needs:	
Library needs:	Ongoing updates to library computers to match Engineering Lab

15. Grade Determinants

The final grade in the course will be the cumulative grade based on the following letter grades

EXHIBIT B - 4

The final grade in the course will be the cumulative grade based on the following letter grades or their numerical equivalents for the course assignments and examinations

A: Excellent

B+: Very Good

B: Good

C+: Above Average

C: Average

D: Below Average

F: Failure

I: Incomplete

R: Audit

For more detailed information on the Ocean County College grading system, please see Policy #5154.

16. Board Approval

History of Board approval dates	Board of Trustees Approval Date: July 28, 2008
	Board of Trustees Approval Date: July 23, 2020
Reviewer Comments	

EXHIBIT B-5

EXHIBIT B - 5

Course Change Request

Date Submitted: 12/05/23 1:01 pm

Viewing: ENGR 225 : Strength & Mechanics of Materials

Last approved: 08/18/21 3:46 pm

Last edit: 12/05/23 1:01 pm

Changes proposed by: Pamela Bogdan (pbogdan)

Catalog Pages referencing this course	Engineering (ENGR)
Learning Outcomes Display (show only)	

1. Course Information

Subject	ENGR - Engineering
School	Science, Technology, Engineering, Mathematics
Course Title	Strength & Mechanics of Materials

2. Hours

Semester Hours	3.00000
Lecture	3
Lab	0
Practicum	0

3. Catalog Description

For display in the online catalog	The course utilizes key concepts of mechanics of materials in various analysis and design applications. Students will apply the concepts of stress-strain, axial loading, torsion, bending, shear, deflection, combined loading, stress and strain transformations, structural failure theories and analysis methodologies to structures such as beams, thin-walled members and columns. They will also have an opportunity to become familiar with the basics of stress-strain testing.

4. Requisites

In Workflow

1. STEM Academic Administrator
2. STEM Dean
3. Executive Director of Curriculum and Program Development
4. Curriculum Committee Chair
5. Senate Chair
6. Vice President of Academic Affairs
7. President's Leadership Team Chair
8. President
9. Board of Trustees Chair
10. STEM Academic Administrator
11. Colleague

Approval Path

1. 12/12/23 1:50 pm Carolyn Showalter (cshowalter): Approved for STEM Academic Administrator
2. 12/13/23 8:44 am Susan O'Connor (soconnor): Approved for STEM Dean
3. 01/08/24 11:50 am Susan O'Connor (soconnor): Approved for Executive Director of Curriculum and

EXHIBIT B - 5

Prerequisites	ENGR 221 ~~181~~
Corequisites	~~ENGR 222~~

5. Course Type

Course Type for Perkins Reporting	vocational (approved for Perkins funding)

6. Justification

Describe the need for this course	Many engineering programs require a course in Mechanics of Materials, also known as Strength of Materials. This course satisfies that requirement.

7. General Education

Will the college submit this course to the statewide General Education Coordinating Committee for approval as a course, which satisfies a general education requirement?

No

If the course does not satisfy a general education requirement, which of the following does it satisfy:

Elective

8. Consistency with the Vision and Mission Statements, the Academic Master Plan, and the strategic initiatives of the College

Please describe how this course is consistent with Ocean County College's current Vision Statement, Mission Statement, Academic Master Plan, and the strategic initiatives of the College:

	Add item
1	Cultivating a technologically progressive and entrepreneurial spirit (Mission Statement)
2	Deliver Innovative Curricula Programs and Assess Current Programs - Develop both transfer and vocational programs (Academic Master Plan)

9. Related Courses at Other Institutions

Comparable Courses at NJ Community Colleges

Institution	Brookdale CC
Course Title	Strength of Materials
Course Number	ENGL 205

of Curriculum and Program Development
4. 01/19/24 12:04 pm Caroline Brittain (cbrittain): Approved for Curriculum Committee Chair

History

1. Aug 18, 2021 by Susan O'Connor (soconnor)

EXHIBIT B - 5

Course Number	ENGT 205
Number of Credits	3
Comments	

Institution	Atlantic Cape CC
Course Title	Mechanics of Materials
Course Number	ENGR 202
Number of Credits	3
Comments	

Institution	Camden County College
Course Title	Mechanics of Materials
Course Number	MET 236
Number of Credits	3
Comments	

Institution	Mercer County CC
Course Title	Mechanics of Materials
Course Number	CIV 229
Number of Credits	4
Comments	

Institution	Rowan College at Burlington County
Course Title	Strength of Materials
Course Number	MET 236
Number of Credits	3
Comments	

Transferability of Course

EXHIBIT B - 5

Georgian Court University

Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
	Elective	

Kean University

Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
		Will not transfer

Monmouth University

Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
	Elective	

Rowan University

Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
ENGR01272 (SOLID MECHANICS) 2 cr	Major	

Rutgers - New Brunswick, Mason Gross School of the Arts

Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
14180243 (MECHANICS OF SOLIDS) (3cr) Or 14650291 (INTRODUCTION TO MECHANICS OF MATERIALS) (3cr)	Major	

Stockton University

Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
		Will not transfer

If not transferable to any institution, explain:

10. Course Learning Outcomes

Learning Outcomes

	Students who successfully complete this course will be able to:
CLO1	Apply engineering principles to problems involving key concept such as stress strain, axial loading, torsion, bending, shear, deflection, combined loading, stress and strain transformations structural failure theories and analysis methodologies
CLO2	Design structures such as beams, thin-walled members and columns
CLO3	Observe live tests and analyze data resulting from basic stress-strain testing
CLO4	Use strength and mechanics of materials theory and analytical methods in support of individual and group engineering design projects

11. Topical Outline

(include as many themes/skills as needed)

	Major Themes/ Skills	Assignments (Recommended but not limited to)	Assessments (Recommended but not limited to)	Course Learning Outcome(s)
TO1	Stress and Strain – Axial Loading & Mechanical Properties of Materials	Reading, discussion, problem sets, projects	Quiz, exam, individual and group project	CLO1,2,4
TO2	Torsion, Bending, Shear & Combined Loading	Reading, discussion, problem sets, projects	Quiz, exam, individual and group project	CLO1,2,4
TO3	Stress and Strain Transformations & Other Analysis Techniques	Reading, discussion, problem sets, projects	Quiz, exam, individual and group project	CLO1,2,4
TO4	Design and Analysis of Structures – Beams, Thin-walled Members, and Columns	Reading, discussion, problem sets, projects	Quiz, exam, individual and group project	CLO1,2,4
TO5	Tensile Testing Methods and Analysis	Reading, discussion, observation and data analytics	Quiz, exam, individual and group project	CLO3
TO6	Use of Strength/Mechanics of Materials Design and Analysis within the Engineering Design Process	Discussion, projects		CLO1,2,4

12. Methods of Instruction

In the structuring of this course, what major methods of instruction will be utilized? Lecture, reading, discussion, problem solving, and observation of technical testing

13. General Education Goals Addressed by this Course (this section is to fulfill state requirements)

Information

Communication-Written and Oral

Quantitative Knowledge and Skills Yes

Related Course Learning Outcome ALL

Related Outline Component ALL

Assessment of General Education Goal (Recommended but not limited to)
Quiz, exam, individual and group project

Scientific Knowledge and Reasoning

Technological Competency

EXHIBIT B - 5

Information Literacy

Society and Human Behavior

Humanistic Perspective

Historical Perspective

Global and Cultural Awareness

Ethical Reasoning and Action

Independent/Critical Thinking Yes

Related Course Learning Outcome ALL

Related Outline Component ALL

Assessment of General Education Goal (Recommended but not limited to)
Quiz, exam, individual and group project

14. Needs

Instructional Materials (text etc.):	An appropriate text or open educational resources will be selected. Contact the department for current adoptions.
Technology Needs:	Tensile Test system including computer (already installed), additional materials for testing and safety (occasionally need restocking)
Human Resource Needs (Presently Employed vs. New Faculty):	Presently employed
Facility Needs:	
Library needs:	

15. Grade Determinants

The final grade in the course will be the cumulative grade based on the following letter grades

EXHIBIT B - 5

The final grade in the course will be the cumulative grade based on the following letter grades or their numerical equivalents for the course assignments and examinations

A: Excellent

B+: Very Good

B: Good

C+: Above Average

C: Average

D: Below Average

F: Failure

I: Incomplete

R: Audit

For more detailed information on the Ocean County College grading system, please see Policy #5154.

16. Board Approval

History of Board approval dates	Board of Trustees Approval Date: July 25, 2011 Board of Trustees Approval Date: August 27, 2020

Reviewer Comments

Key: 743

EXHIBIT B-6

EXHIBIT B - 6

Course Change Request

Date Submitted: 12/05/23 12:02 pm

Viewing: **ENGR 251 : Electrical Engineering I**

Last approved: 04/15/21 1:39 pm

Last edit: 12/05/23 12:02 pm

Changes proposed by: Pamela Bogdan (pbogdan)

Catalog Pages referencing this course	Engineering (ENGR)
Learning Outcomes Display (show only)	

1. Course Information

Subject	ENGR - Engineering
School	Science, Technology, Engineering, Mathematics
Course Title	Electrical Engineering I

2. Hours

Semester Hours	4.00000
Lecture	3.00
Lab	3.00
Practicum	N/A

3. Catalog Description

For display in the online catalog	Circuits are studied using the analytical tools of the engineer. The required theorems and techniques are derived first using resistive circuits, and then applied to RC, RL, and RLC networks. Transient analysis of these networks is then studied, followed by sinusoidal steady-state analysis, and sinusoidal power calculations. Laboratory work is correlated with the lectures.

4. Requisites

Prerequisites	~~MATH 266~~

In Workflow

1. **STEM Academic Administrator**
2. **STEM Dean**
3. **Executive Director of Curriculum and Program Development**
4. **Curriculum Committee Chair**
5. **Senate Chair**
6. Vice President of Academic Affairs
7. President's Leadership Team Chair
8. President
9. Board of Trustees Chair
10. STEM Academic Administrator
11. Colleague

Approval Path

1. 11/16/21 11:50 am Cynthia Fallon (cfallon): Rollback to Initiator
2. 12/12/23 1:51 pm Carolyn Showalter (cshowalter): Approved for STEM Academic Administrator
3. 12/13/23 8:45 am Susan O'Connor (soconnor): Approved for STEM Dean
4. 01/08/24 11:51 am Susan O'Connor

EXHIBIT B - 6

Corequisites PHYS 282, MATH 266 ~~PHYS 282~~

5. Course Type

Course Type for Perkins Reporting: non-vocational (not approved for Perkins funding)

6. Justification

Describe the need for this course: Most engineering programs require a course in electrical engineering regardless of the major specialization area. This course satisfies that requirement.

7. General Education

Will the college submit this course to the statewide General Education Coordinating Committee for approval as a course, which satisfies a general education requirement?

No

If the course does not satisfy a general education requirement, which of the following does it satisfy:

Elective

8. Consistency with the Vision and Mission Statements, the Academic Master Plan, and the strategic initiatives of the College

Please describe how this course is consistent with Ocean County College's current Vision Statement, Mission Statement, Academic Master Plan, and the strategic initiatives of the College:

	Add item
1	i. Demonstrating the college's commitment to offer comprehensive educational programs that develop intentional learners of all ages. (Mission Statement)
2	Seeking to ensure that students will thrive in an increasingly diverse and complex world. (Vision Statement)
3	Preparing students for successful transfer to other educational institutions and/or for entrance into the workforce. (Academic Master Plan)
4	Seeking to empower students through the mastery of intellectual and practical skills. (Academic Master Plan)
5	Challenging students to transfer information into knowledge and knowledge into action. (Academic Master Plan)

9. Related Courses at Other Institutions

Comparable Courses at NJ Community Colleges

Susan O'Connor (soconnor): Approved for Executive Director of Curriculum and Program Development

5. 01/19/24 12:04 pm Caroline Brittain (cbrittain): Approved for Curriculum Committee Chair

History

1. Apr 15, 2021 by Susan O'Connor (soconnor)

EXHIBIT B - 6

Comparable Courses at NJ Community Colleges

Transferability of Course

Georgian Court University

Kean University

Monmouth University

Rowan University

Rutgers - New Brunswick, Mason Gross School of the Arts

Stockton University

If not transferable to any institution, explain:

10. Course Learning Outcomes

Learning Outcomes

	Students who successfully complete this course will be able to:
CLO1	Create simple resistive circuits
CLO2	Create RC and RLC circuits
CLO3	Run computer simulations on circuits and interpret the results
CLO4	Demonstrate sinusoidal steady state analysis
CLO5	Solve power calculations

11. Topical Outline

(include as many themes/skills as needed)

	Major Themes/ Skills	Assignments (Recommended but not limited to)	Assessments (Recommended but not limited to)	Course Learning Outcome(s)
TO1	• Circuit Variables • Circuit elements • Simple Resistive Circuits • Techniques to Circuit Analysis • Node-Voltage Methods • Source Transformations			

	• Source Transformations • Thevevin/Norton Equivalents • Maximum Power Transfer • Operational Amplifier • Terminal Voltages/Currents • Inverting/Summing Amplifier • Differential Mode • Inductance Capacitance • Inductor, Capacitor • Series Parallel Combinations • Natural Response of • RL & RC Circuits • Step Response of 1st Order • RL & RC Circuits • Integrating Amplifier • Natural & Step Responses of • RCL Circuits • Sinusoidal Steady State Analysis • Sinusoidal Steady State • Power Calculations • Real and Reactive Power • Complex Power, Power Calculations • Sinusoidal Steady State • Power Calculations • Real and Reactive Power, • Complex Power, Power Calculations			

12. Methods of Instruction

In the structuring of this course, what major methods of instruction will be utilized?	Three hours of lecture and three hours of computer laboratory work per week. The laboratory sessions enhance and correlate with the coursework.

13. General Education Goals Addressed by this Course (this section is to fulfill state requirements)

Information

Communication-Written and Oral

Quantitative Knowledge and Skills

Scientific Knowledge and Reasoning

Technological Competency Yes

Related Course Learning Outcome N/A

Related Outline Component N/A

Assessment of General Education Goal (Recommended but not limited to)
N/A

Information Literacy

Society and Human Behavior

Humanistic Perspective

Historical Perspective

Global and Cultural Awareness

Ethical Reasoning and Action

Independent/Critical Thinking Yes

Related Course Learning Outcome N/A

Related Outline Component N/A

Assessment of General Education Goal (Recommended but not limited to)
N/A

14. Needs

Instructional Materials (text etc.): An appropriate text will be selected. Contact the department for current adoptions.

Technology Needs:

Human Resource

EXHIBIT B - 6

Needs (Presently Employed vs. New Faculty):

Facility Needs:

Library needs:

15. Grade Determinants

The final grade in the course will be the cumulative grade based on the following letter grades or their numerical equivalents for the course assignments and examinations

A: Excellent

B+: Very Good

B: Good

C+: Above Average

C: Average

D: Below Average

F: Failure

I: Incomplete

R: Audit

For more detailed information on the Ocean County College grading system, please see Policy #5154.

16. Board Approval

History of Board approval dates	Board of Trustees Approval Date: September 22, 2008 Board of Trustees Approval Date: May 24, 2010 Board of Trustees Approval Date: May 29, 2012
Reviewer Comments	**Cynthia Fallon (cfallon) (11/16/21 11:50 am):** Rollback: I believe you wanted to make additional edits.

Key: 744