



## JOHN CABOT UNIVERSITY

<p style="text-align: center;"><b>COURSE CODE: ENGR 201</b> <b>COURSE NAME: Biomedical Engineering Fundamentals</b> <b>Summer Session Sample Syllabus</b></p>
<p>TOTAL NO. OF CONTACT HOURS: 45 CREDITS: 3 PREREQUISITES: MA 198 Calculus I</p>
<p><b>COURSE DESCRIPTION:</b></p> <p>Working specifically within the framework of biomedical engineering applications, this course provides the engineering fundamentals of the conservation laws of mass, energy, charge, and momentum. This includes approaching problems from an engineering perspective, dimensional analysis, foundations of engineering calculations, and practical applications of the conservation principles.</p>
<p><b>SUMMARY OF COURSE CONTENT:</b></p> <p>For the purpose of transfer credit, refer to the course description (above) and the topical schedule (below). This course was prepared by an engineering faculty at the University of Florida. This is a rigorous course that prepares students for success in subsequent engineering coursework, particularly in biomedical engineering. Non-biomedical engineering majors may benefit from this course as well because it covers material and energy balances similar to courses in other engineering majors.</p>
<p><b>LEARNING OUTCOMES:</b></p> <p>By the end of this course, students will be able to:</p> <ol style="list-style-type: none"><li>1. Approach material and energy balance problems from an engineering perspective.</li><li>2. Apply dimensional analysis to a problem and use dimensionless groups.</li><li>3. Apply conservation principles to solve practical problems.</li><li>4. Additionally, this course has been structured to provide opportunities for students to develop certain skillsets that are critically important to the professional practice of engineering:</li><li>5. Students take responsibility for their own learning.</li><li>6. Students apply a careful, slow, and methodological approach to engineering problem-solving.</li><li>7. Students communicate their work effectively by combining succinct and comprehensible mathematical calculations, diagrams or flowcharts, and written commentary.</li><li>8. Students recognize the value of reliable, accurate computations.</li><li>9. Students recognize the importance of checking their own work.</li><li>10. Students build their engineering intuition and judgment by connecting abstract theories to practical applications</li></ol>
<ul style="list-style-type: none"><li>• <b>TEXTBOOK:</b> Bioengineering Fundamentals, Saterbak, San, and McIntire, ISBN: 0-13-463743-7</li></ul>



## JOHN CABOT UNIVERSITY

### ASSESSMENT METHODS:

Assignment	Guidelines	Weight
Homework	Homework assignments will be graded: the average grade weighs 10 percent of the final grade.	35%
Attendance	Full credit for attendance will be given to students with three or fewer unexcused absences. Four or more absences will result in a proportional reduction of the grade.	10%
Quizzes	Every week, starting from the second week, students will be asked to solve and hand in a simple, fifteen-to-twenty-minute quiz. The average quiz score weighs fifteen percent of the final grade.	5%
Mid-term exam		25%
Final exam (comprehensive)		25%

### -ASSESSMENT CRITERIA:

A Work of this quality directly addresses the question or problem raised and provides a coherent argument displaying an extensive knowledge of relevant information or content. This type of work demonstrates the ability to critically evaluate concepts and theory and has an element of novelty and originality. There is clear evidence of a significant amount of reading beyond that required for the course.

B This is highly competent level of performance and directly addresses the question or problem raised. There is a demonstration of some ability to critically evaluate theory and concepts and relate them to practice. Discussions reflect the student's own arguments and are not simply a repetition of standard lecture and reference material. The work does not suffer from any major errors or omissions and provides evidence of reading beyond the required assignments.

C This is an acceptable level of performance and provides answers that are clear but limited, reflecting the information offered in the lectures and reference readings.

D This level of performances demonstrates that the student lacks a coherent grasp of the material. Important information is omitted and irrelevant points included. In effect, the student has barely done enough to persuade the instructor that s/he should not fail.

F This work fails to show any knowledge or understanding of the issues raised in the question. Most of the material in the answer is irrelevant.

### ATTENDANCE REQUIREMENTS:

Full credit for attendance will be given to students with three or fewer unexcused absences. Four or more absences will result in a proportional reduction of the grade. Coming late to class or leaving early will be possible only with permission of the instructor.

Missed exams may not be made up.

*Please refer to the university catalog for the attendance and absence policy.*

### ACADEMIC HONESTY

As stated in the university catalog, any student who commits an act of academic dishonesty will receive a failing grade on the work in which the dishonesty occurred. In addition, acts of academic



## JOHN CABOT UNIVERSITY

dishonesty, irrespective of the weight of the assignment, may result in the student receiving a failing grade in the course. Instances of academic dishonesty will be reported to the Dean of Academic Affairs. A student who is reported twice for academic dishonesty is subject to summary dismissal from the University. In such a case, the Academic Council will then make a recommendation to the President, who will make the final decision.

### STUDENTS WITH LEARNING OR OTHER DISABILITIES

John Cabot University does not discriminate on the basis of disability or handicap. Students with approved accommodations must inform their professors at the beginning of the term. Please see the website for the complete policy.

### BRIEF LIST OF TOPICS COVERED

Engineering calculations, chemistry conversions, accounting equations, mass flow and balances, systems with multiple subunits, dynamic systems with mass and chemical reactions, conservation of charge, conservation of momentum, momentum of fluids.