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| DOCUMENT: **SYLLABUS** | COURSE CODE: **CCPHYS2L** | COPIES ISSUED TO:  **College of Computing and Information Technologies Faculty** |
| DATE OF EFFECTIVITY: **AY 2023-2024** | COURSE TITLE: **COLLEGE PHYSICS 2** |

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| **VISION**  We are National University, a dynamic private institution committed to national building, recognized internationally in education and research  **MISSION**  Guided by the core values and characterized by our cultural heritage of Dynamic Filipinism, National University is committed to providing relevant, innovative, and accessible quality education and other development programs.  We are committed to our:   * **STUDENTS**, by molding them into life-long learners, ethical and. Spiritual citizens and self-directed agents of change. * **FACULTY and EMPLOYEES**, by enhancing their competencies, stimulating their passions, cultivating their commitment, and providing a just and fulfilling work environment. * **ALUMNI,** by strengthening their sense of pride through engagement, loyalty and love for their alma mater. * **INDUSTRY PARTNERS and EMPLOYERS**, through active collaborations, providing them Nationalians who will contribute to their growth and development.   **COMMUNITY,** by contributing to the improvement of life conditions and well-being of its members. | **CORE VALUES**  1. Integrity 2. Compassion 3. Innovation 4. Resilience 5. Patriotism   |  |  | | --- | --- | | **GRADUATE ATTRIBUTES INTENDED FOR NATIONALIANS (GAINs)** | **INSTITUTIONAL LEARNING OUTCOMES (ILO)** | | 1. Leadership and Teamwork | 1. Exhibit moral, ethical, and competent leadership. | | 1. Collaborate effectively in teams of different cultures. | | 1. Responsible Citizenship | 1. Participate actively in community-oriented advocacies that contribute to nation-building. | | 1. Innovative, Creative, and Critical Thinking | 1. Develop an entrepreneurial mindset. | | 1. Provide solutions to challenges in various fields of specialization and society in general. | | 1. Academic and Professional Competence | 1. Demonstrate mastery of foundational skills and specific areas of specialization. | | 1. Effective Communication | 1. Express ideas meaningfully, accurately, and appropriately in multicultural and multidisciplinary contexts. | | 1. Whole Person Character | 1. Practice NU Core Values in personal and professional life. | | 1. Life and Career Skills Orientation | 1. Engage in continuing personal and professional development. | | 1. Exemplify the capacity for self-reflection. | | 1. Demonstrate adaptability, flexibility, productivity, and accountability in diverse settings. | | 1. Technological Literacy | 1. Exhibit mastery in navigating various technological tools and techniques. | |

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| **Program Educational Objectives (PEO)**  After 3 to 5 years on the job, BS Bachelor of Science graduates of NU are expected to: |  | | **ILO** | | | | | | | | | | | |
| **A** | **B** | | **C** | **D** | **E** | **F** | **G** | **H** | **I** | **J** | **K** | **L** |
| 1. Our graduates have professional careers in industry or academe or are engaged in advanced studies. |  |  | |  | 🗸 | 🗸 | 🗸 | 🗸 |  | 🗸 |  | 🗸 | 🗸 |
| 1. Our graduates continue to seek knowledge to thrive in an increasingly globalized society. |  |  | |  |  |  | 🗸 |  |  | 🗸 |  | 🗸 | 🗸 |
| 1. Our graduates are successful team members or team leaders. | 🗸 | 🗸 | |  |  |  |  |  | 🗸 |  | 🗸 |  |  |
| 1. Our graduates conduct themselves with integrity and incorporate proper ethical considerations in applying computing-based solutions that contribute to nation building. | 🗸 |  | | 🗸 |  |  |  |  | 🗸 |  | 🗸 | 🗸 |  |

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| **STUDENT OUTCOMES (SO)**  **At the time of graduation, the student must be able to:** | **PROGRAM EDUCATIONAL OUTCOMES (PEO)** | | | |
| **PEO1** | **PEO2** | **PEO3** | **PEO4** |
| 1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions. |  |  |  |  |
| 1. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program’s discipline. |  |  |  |  |
| 1. Communicate effectively in a variety of professional contexts. |  |  |  |  |
| 1. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles. |  |  |  |  |
| 1. Function effectively as a member or leader of a team engaged in activities appropriate to the program’s discipline. |  |  |  |  |
| 1. Apply computer science theory and software development fundamentals to produce computing-based solutions. |  |  |  |  |

## COURSE DESCRIPTION

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This course is designed specifically for engineering students to help them develop deeper understanding of general Physics problems and concepts, and build calculus-based problem-solving skills. Moreover, this course covers areas in electromagnetism such as electrostatics, electricity, magnetism. Numerous examples and applications relating to electromagnetism to everyday situations will be used to illustrate physical principles. Finally, the unifying aspect of physical laws in electromagnetism the basic simplicity of nature form the underlying theme of this course.

**PRE-REQUISITE(S)**

CCPHYS1L **COLLEGE PHYSICS 1**

### COURSE OUTCOMES (CO)

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| --- | --- | --- | --- | --- | --- | --- |
| At the end of the course, the student must be able to: | **Program Outcomes (PO)** | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1. Use calculus to solve problems in Electrostatics and Electromagnetism; | I |  |  |  |  |  |
| 2. Apply the Laws used in DC circuitry and Magnetism; | I |  |  |  |  |  |
| 3. Design simple to complicated DC circuits; | I |  |  |  |  |  |

I- Introduce R- Reinforced D- Demonstrate

**CREDIT**

4 Units

**TIME ALLOTMENT**

4 hours Lecture every week

4 hours Laboratory every week

**COURSE REQUIREMENTS**

Assessment Task (Activity, Assignment)

Long Exam

**CLASS POLICIES**

1. Attendance is necessary for each student to obtain maximum benefits for instruction, 80% attendance or 69 hours for one trimester is required.
2. Failure to wear complete uniform will be considered an absence and the student will not be allowed to take any examination.
3. Special examination is only given for excused absences. Excuse letter duly signed by the parents/guardian or a medical examination (in case of sickness) is required.
4. Students may bring their cellular phones to class provided these are placed on silent mode. These should not be used during class hours except during extreme necessities. Cellular phones should be switched off during examinations.
5. Students should be in complete uniform and exam permit should be presented during major examinations.
6. Any form of cheating will not be tolerated.
7. Students are expected to wait for 15 minutes for a one (1) hour class and 20 minutes for a one and a half (1½) hour class before leaving if the instructor is not around. However, the class president is expected to check with any CCIT professor if a substitute professor will take over.

**GRADING SYSTEM**

**Grade Equivalent**

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| --- | --- |
| **Grade Range (%)** | **Grade Point** |
| 96 – 100 | 4.0 |
| 90 – 95 | 3.5 |
| 84 – 89 | 3.0 |
| 78 – 83 | 2.5 |
| 72 – 77 | 2.0 |
| 66 – 71 | 1.5 |
| 60 – 65 | 1.0 |
| 59 and below | R |

Learning Activities 30%

Long Exam 30%

Project 40%

**COURSE CONTENTS/COURSE OUTLINE**

| ***WEEK*** | ***COURSE OUTCOMES*** | ***TOPIC OUTCOMES*** | ***TOPICS*** | ***METHODOLOGY*** | ***RESOURCES*** | ***ASSESSMENT*** |
| --- | --- | --- | --- | --- | --- | --- |
| 1-2 |  |  | Class Orientation   * University Mission & Vision * College Mission & Vision * Course Syllabus * Lab Guidelines and Safety | Lecture / Discussion |  |  |
| * List the differences and similarities between conductors and insulators * Describe the process of charging by induction | * Electric Charges & Conductors * Electric Field * Coulomb’s Law * Gauss’ Law |
| 3 |  |  | * Electric Potential * Capacitors | Lecture / Discussion |  | Quiz 1 Laboratory 1 |
| 4-6 |  | * Differentiate between resistance and resistivity * Define the term conductivity * Describe the electrical component known as a resistor | * Resistivity and Resistance * Ohm’s Law * Source of Electro Magnetic Field * DC Circuits * Power in DC Circuit * Kirchhoff’s Rules * Electrical Energy | Lecture / Discussion |  | Quiz 2 / Laboratory 2/  Major Examination |
| 7 |  |  | Examination Week | Examination Week |  |  |
| 8-9 |  | * Calculate electric flux for a given situation | * Magnetic Materials * Sources of Magnetic Field   Magnetic Forces | Lecture / Discussion |  | Quiz 3 / Laboratory 3 |
| 10-11 |  | * Solve for the electric field based on a changing magnetic flux in time | * Electromagnetic Induction * Inductance | Lecture / Discussion |  | Laboratory 4 |
| 12-13 |  | * Explain Maxwell’s correction of Ampère’s law by including the displacement current | * Maxwell’s Equations Common Forces | Lecture / Discussion |  |  |
| 13.5 | FINAL EXAMINATION | | | | | |

**RESOURCES**

OpenStax. (n.d.). University Physics Volume 2. OpenStax. https://openstax.org/details/books/university-physics-volume-2

University of Colorado Boulder. (Year). Title of the simulation. PhET Interactive Simulations. https://phet.colorado.edu/simulations/simulation-name

Halliday, D., Resnick, R., & Walker, J. (2017). Fundamentals of Physics (10th ed.). John Wiley & Sons.

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| PREPARED BY:  Faculty, CCIT | CHECKED BY:  **JEOJILYN G. NABOR**  University Librarian | RECOMMENDED FOR APPROVAL:  **SUSAN SAMSON-CALUYA**  Chair, BSCS | APPROVED BY:  **EMELIZA R. YABUT**  Dean |