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|--|--|------|--|--------------------|---|--|--|
| 豊田工業高等専門学校   |  | 開講年度 | 令和02年度 (2020年度)  |                    | 授業科目  | 科学英語基礎 I A   |  |
| 科目基礎情報   |  |      |  |                    |   |  |  |
| 科目番号   | 03128  |      | 科目区分   | 一般 / 必修修, 選択必修 (英) |   |  |  |
| 授業形態   | 講義   |      | 単位の種別と単位数  | 履修単位: 1            |   |  |  |
| 開設学科   | 建築学科   |      | 対象学年   | 3                  |   |  |  |
| 開設期  | 前期   |      | 週時間数   | 2                  |   |  |  |
| 教科書/教材   | MYP Physical and Earth Sciences Years 1-3: A Concept-Based Approach by William Heathcote (ISBN-13: 978-0198369981)   |      |  |                    |   |  |  |
| 担当教員   | サルマサン. レジーナ. マデロ   |      |  |                    |   |  |  |
| 到達目標   |  |      |  |                    |   |  |  |
| At the end of the course, the students should be able to:<br>A. Solve simple physical science word problems;<br>B. Properly explain the solutions to simple physical science word problems; and<br>C. Perform a simple demonstration and explain the underlying scientific principles. |  |      |  |                    |   |  |  |
| ルーブリック   |  |      |  |                    |   |  |  |
|  | 理想的な到達レベルの目安   |      | 標準的な到達レベルの目安   |                    | 未到達レベルの目安   |  |  |
| Objective A  | The student is able to provide solutions to applied physical science word problems without the need for any kind of intervention from the teacher.   |      | The student is able to provide solutions to simple physical science problems with minimal intervention from the teacher.                           |                    | The student is unable to provide solutions to simple physical science problems even with various forms of intervention.                           |  |  |
| Objective B  | The student is able to properly explain the solutions to applied physical science word problems in his/her own words without the need for any kind of intervention from the teacher.   |      | The student is able to explain the solutions to simple physical science word problems with minimal intervention from the teacher.                  |                    | The student is unable to explain the solutions to simple physical science word problems even with various forms of intervention.                  |  |  |
| Objective C  | The student is able to confidently perform a simple demonstration and explain the underlying scientific principles in his/her own words in a way that is engaging to the intended audience without the need for any kind of intervention from the teacher.                       |      | The student is able to present a simple demonstration and explain the underlying scientific principles with minimal intervention from the teacher. |                    | The student is unable to present a simple demonstration and explain the underlying scientific principles even with various forms of intervention. |  |  |
| 学科の到達目標項目との関係  |  |      |  |                    |   |  |  |
| 本校教育目標 ④ コミュニケーション能力   |  |      |  |                    |   |  |  |
| 教育方法等  |  |      |  |                    |   |  |  |
| 概要   | In this course, the students will utilize knowledge obtained from previous Science and English courses to properly state scientific laws, theories, etc. using the English language. They will also analyze physical science word problems and explain their possible solutions. |      |  |                    |   |  |  |
| 授業の進め方・方法  | This course involves lectures, demonstrations, board works and oral presentations.   |      |  |                    |   |  |  |
| 注意点  | Homework, oral examinations and quizzes will be regularly conducted in class.<br>A project will be presented as a culminating activity for the course.   |      |  |                    |   |  |  |
| 選択必修の種別・旧カリ科目名   |  |      |  |                    |   |  |  |
| 授業計画   |  |      |  |                    |   |  |  |
|  |  | 週    | 授業内容   |                    |   | 週ごとの到達目標   |  |
| 前期   | 1stQ   | 1週   | Introduction   |                    |   | Explain the target objectives and grading system.  |  |
|  |  | 2週   | Constant-velocity Linear Motion  |                    |   | Explain and solve simple word problems about motion (speed, displacement and time), average speed and instantaneous speed.                     |  |
|  |  | 3週   | Uniformly Accelerated Linear Motion  |                    |   | Explain the meaning of speed and acceleration, and the relationship between initial speed, speed, acceleration, time, and displacement.        |  |
|  |  | 4週   | Uniformly Accelerated Linear Motion  |                    |   | Solve simple word problems about uniformly accelerated motion, speed and acceleration and unit conversions.                                    |  |
|  |  | 5週   | Newton's Laws of Motion  |                    |   | Explain the statements of Newton's Laws of Motion.   |  |
|  |  | 6週   | Newton's Laws of Motion  |                    |   | Solve word problems involving Newton's Laws of Motion.   |  |
|  |  | 7週   | Project presentation planning  |                    |   |  |  |
|  |  | 8週   | Various Forces: gravity, universal gravitation, elasticity, friction   |                    |   | Explain the concepts of gravity, universal gravitation, elasticity, and friction.  |  |
|  | 2ndQ   | 9週   | Various Linear Motions   |                    |   | Derive an equation of motion to obtain the desired physical quantity.  |  |
|  |  | 10週  | Various Linear Motions   |                    |   | Explain vertical motion (free fall motion, throwing motion).<br>Solve problems related to vertical motion (free fall motion, throwing motion). |  |
|  |  | 11週  | Various Linear Motions   |                    |   | Explain the equation of motion for the motion of connected objects.  |  |
|  |  | 12週  | Various Linear Motions   |                    |   | Solve problems related to kinetic and static friction.   |  |

|  |  |     |                      |   |
|--|--|-----|----------------------|---|
|  |  | 13週 | Impulse and Momentum | Explain the relationship between momentum and impulse, and the law of conservation of momentum. |
|  |  | 14週 | Project Presentation |   |
|  |  | 15週 | Review               |   |
|  |  | 16週 | Term-End Examination |   |

# モデルコアカリキュラムの学習内容と到達目標

| 分類    |         | 分野              | 学習内容            | 学習内容の到達目標  | 到達レベル | 授業週                                    |
|-------|---------|-----------------|-----------------|--|-------|--|
| 基礎的能力 | 人文・社会科学 | 英語              | 英語運用能力向上のための学習  | 関心のあるトピックや自分の専門分野に関する論文やマニュアルなどの概要を把握し、必要な情報を読み取ることができる。                                   | 3     | 前1,前2,前3,前4,前5,前6,前7,前8,前9,前10,前11,前12 |
|       |         |                 |                 | 英文資料を、自分の専門分野に関する論文の英文アブストラクトや口頭発表用の資料等の作成にもつながるよう、英文テクニカルライティングにおける基礎的な語彙や表現を使って書くことができる。 | 3     | 前13,前14                                |
|       | 工学基礎    | グローバル化・異文化多文化理解 | グローバル化・異文化多文化理解 | それぞれの国や地域の経済的・社会的な発展に対して科学技術が果たすべき役割や技術者の責任ある行動について説明できる。                                  | 3     | 前15                                    |

# 評価割合

|        | Examination | Presentation | Task | 合計  |
|--------|-------------|--------------|------|-----|
| 総合評価割合 | 50          | 30           | 20   | 100 |
| 基礎的能力  | 50          | 30           | 20   | 100 |