**INSERT TOPIC HERE:**

**INSTRUCTOR GUIDE**

**INSERT BRIEF MODULE DESCRIPTION HERE:** Please provide a brief description of the learning goals of the module and an estimate of how long the module should take students to complete.

**Example:** This module contains exercises designed to help students see photosynthesis in both a real-world context and as conceptually integrated with cellular respiration as well as with industrial CO2 production. The module is designed to be implemented in a 50 minute laboratory session.

**INSERT TABLE OF CONTENTS HERE** Please provide a table of contents. Each module should contain a table that aligns module questions to quantitative competencies, and outline of concepts, module activity and implementation, the module, pre-lab exercises, guidelines for implementation, suggested assessment questions, and contact information for module developers

**Example:**

Quantitative competencies and Quantitative Goals.………………………………...........1

Target student population………………………….…………………………………………1

Module characteristics………………………………………………………….……............2

Module: Worksheet for completion in class (with key).................................................3-6

Pre-laboratory Exercises......................…………..……………………….………….........7

Guidelines for Implementation……………………………...............….............................8

Assessment Questions…………………………………………………………………........8

Contact Information for Module Developers..................................................................9

**INSERT QUANTITATIVE GOALS AND QUANTITATIVE COMPETENCIES COVERED BY THE MODULE HERE (List of Quantitative Competencies and Goals can be found** [**here**](https://umbc.box.com/s/oa0cgxe1fj7t7s77ygkapdukd4x8ewi1)**)**

Module Activity Mapping

|  |  |  |
| --- | --- | --- |
| QUANTITATIVE COMPETENCY | QUANTITATIVE GOAL | MODULE ACTIVITY |
|  |  |  |
|  |  |  |
|  |  |  |

**INSERT TARGET STUDENT POPULATION HERE** Please provide a description of the target student population, to include pre-requisite knowledge required for the module and course enrollment.

**EDIT MODULE CHARACTERISTICS BELOW** Please provide details on the mathematical concepts covered, in-class activities and module components, estimated time required to complete in class vs. out of class, targeted student population, and quantitative skills required.

**EXAMPLE**

Mathematical Concepts covered:

**-** unit conversion

- setting up equations

- scientific notation

- simple manipulations based on the stoichiometry of chemical equations

In class activities:

- group discussion of answers to pre-class unit conversion problems

- setting up of equations based on the stoichiometry of chemical equations

- solving these equations

Components of module:

- preparatory assignment to complete and turn in as homework before class

- in class worksheet:

- suggested assessment questions

- guidelines for implementation

Estimated time to complete in class worksheet

- 60 minutes

Quantitative Skills Required:

- Basic arithmetic

- Logical reasoning

- Unit conversion

**INSERT MODULE HERE WITH SOLUTIONS**

**INSERT PRE-LAB EXERCISES HERE** This should include quantitative skills necessary to complete the module that students may have to review. Note that this section may be institution dependent.

**INSERT IMPLEMENTATION INSTRUCTIONS HERE**

**EXAMPLE Guide for Implementation: Lab Activity**

These are pencil and paper activities so no special materials / computers are needed.

Have students break up into groups of 3 to work on the problems. After a few minutes or when most teams are done, the TA should then pick a person from 3 groups chosen at random to share with the class their group’s answer to the question. Tell them that everyone in the group should be prepared to share the answer with the class, as you will chose who speaks randomly among the group. Or, have groups do the whole worksheet and debrief afterwards.

**INSERT SAMPLE ASSESSMENT QUESTIONS HERE.** PLEASE INCLUDE A TABLE THAT MATCHES ASSESSMENT QUESTIONS TO QUANTITATIVE GOALS OF THE MODULE AND QUANTITATIVE COMPETENCIES.

|  |  |  |
| --- | --- | --- |
| QUANTITATIVE COMPETENCY | QUANTITATIVE GOAL | ASSESSMENT QUESTION(S) |
|  |  |  |

Required summative assessment question(s):

Suggested summative assessment question(s):

**INSERT MODULE DEVELOPERS NAMES AND CONTACT INFORMATION**

**EXAMPLE**

**Module Developers:**

Please contact us if you have comments/suggestions/corrections

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