



**Instructional Strategies:** Activities for achieving the stated objectives are the worksheet (lecture tutorials) and collaborate documents. For the worksheet, give a lecture with the problem solutions that can be experienced in the product development with sustainability concern. Then, the excel worksheet with the specific instructions is given to students and students fill the blanks with consideration of enhanced sustainability. Problems in the excel sheet is similar with what students learned from lectures. This is individual activity and requires independent thinking and problem solving skills.

### Instructions

Complete the following exercises on your own.

You should fill in yellow, blue, and orange cells and upload the completed Excel file to Canvas.

Yellow cells are for number inputs; blue cells are for equation inputs; orange cells are for text input.

Look for small red triangles in the corner of some cells that indicate instructional comments for completing the tables.

Remember that this case study should not be completed or discussed with any member of the Product Development course.

Calculate values by using the Excel function so that instructors and TAs identify that procedure is correct.

### Practical case

We are a family business that started to make fruit juices 109 years ago. Currently, our product is on the shelves of all American supermarkets. To make our juices we always use fresh fruit instead of powders or concentrate. The problem with fresh fruit is that we don't know what to do with the fibers that remain in the shredder.

They are normally sold for livestock, but we have to sell them at a much lower price than what we buy the fruits at first. We want to develop a clean label, innovative and sustainable new product.

Assess the potential solutions for sustainability and product circularity.

Develop a life cycle for the solution.

For the collaborate documents, students form groups and develop new food products including evaluation of their sustainability. Students work together in the group to prepare presentation and to present it to the class. The rubric is given before the presentation to show how they are evaluated. This is group activity and requires problem solving and intercommunication skills for their knowledge.

### Assessment Strategy:

#### Formative assessment

- Grading the worksheet activity for solving the case problem in every class activity.

#### Summative assessment

- Assessing the final oral presentation by instructors, TAs, invited faculties and staffs, and other students (rubric)
- Assessing the final written presentation by instructors and TAs (grading sheet)