

**Appendix A.** Questionnaire for the first step of validation of MESTRAL: checking by other fellow contributors.

Reader's name:

Module name:

*Questions are to be answered for every eK-book element (Cmap, knowledge sheet, simulator, etc.).*

Does the **Cmap** overlook any concept?

Are concepts accurate enough?

If not, which ones?

Is the **knowledge sheet** well located on the Cmap?

If not, where should it be better located?

Any correction to be performed on the sheet content?

**Simulator:** Do the graphs lack clarity?

If yes, which ones?

Did you encounter any surprising case – for which parameter set? Why?

Are the results presented consistent with Cmaps and knowledge sheets?

**Exercises:** Are questions clearly formulated?

Are answers exhaustive?

**Appendix B.** Questionnaire for the second step of validation of Mestral by potential users from various horizons:

### **Feedback form/survey of a MESTRAL module**

The AgreenCamp-MESTRAL project (Modelling and Simulation of Food Processing) is funded by the ANR (French National Research Agency). MESTRAL offers a set of 15 digital learning modules in the form of 15 electronic knowledge books.

You are one of our first users to try the MESTRAL modules. We hope that you have found the module interesting and that it will be useful to you as part of your studies and/or professional training.

This feedback form will help us to improve the module. It will take about 20 minutes to fill in the form. Thank you in advance for your help.

The MESTRAL project team.

There are 20 questions in this **questionnaire**.

**1) Your organisation (teaching, research, company, etc.) is** (Please **select** one answer below):

AgroParisTech, AgroSup Dijon, ANSES, Bordeaux Sciences Agro, CIRAD, INP Toulouse ENSAT, INRAE  
IRSTEA, Montpellier SupAgro, ONIRIS, Université de Lorraine ENSAIA, Université de Montpellier, VetAgro Sup  
Other (please specify)

**2) Your education level is** (Please **select/choose** one answer below):

Bachelor's degree: 1st year, 2nd year, 3rd year  
Master's degree: 1st year, 2nd year  
PhD Postdoctoral  
Other (please specify)

**3) Your supervisor (teacher or referent) is** (Please **select/choose** one answer below):

Alain Kondjoyan, Amadou Ndiaye, Artemio Plana-Fattori, Cédric Baudrit, Cristian Trelea, Denis Flick,  
Dominique Della Valle, Francis Courtois, Guillaume Delaplace, Guy Della Valle, Hubert Chiron,  
Kamal Kansou, Laurence Pottier, Magdalena Kristiawan, Patrice Buche, Philippe Bohuon,  
Pierre-Sylvain Mirade, Sébastien Curet-Ploquin, Sofiane Guessasma, Valérie Guillard,  
Violaine Athès-Dutour  
Other (please specify):

**4) The MESTRAL module you have explored is** (Please **select/choose** one answer below):

Banana frying  
Starch suspension in a heat exchanger  
**Aroma release from yoghurt in mouth** (module available in English)  
Texture of solid cereal foams  
Microwave heating of pan bread, beef  
Static mixing of liquid milk foams  
Extrusion-cooking of cereals & starchy products  
Packaging of dry and fresh foods  
Drying of corn and rice grains  
Meat carcass cooling  
Fish and meat under high pressure  
Agitation of syrups and milk powders  
Bread-making

Cheese ripening  
Cold chain and microbiological activity of ham

**5) The teaching method (format) of the module followed was** (Please **select/choose** one answer below):

Hybrid **classes/lessons** with supervisor  
Hybrid tutorials with supervisor  
Hybrid practical tutorials with supervisor  
Personal project with supervisor  
Online independent learning outside classes, then exchange with supervisor in class (flipped classroom)  
Online independent learning without supervision (self-training)

**6) Estimated time spent exploring the module is (in hours, ex. 1 h, 1-1/2 h, 2 h, etc.):**

**7) Date module was studied:**                      Format : dd/mm/yyyy

**8) Which sections of the module did you explore?** (Check as many as apply)

Food products    /                      Processes                      /                      Model(s) & simulator(s)    /                      Training exercises

**9) What is your overall satisfaction with the module you have followed?** (Please **select/choose** one answer below)

Very satisfied    /                      Somewhat satisfied                      /                      Somewhat dissatisfied                      / Very dissatisfied

**10) Was the content of this module well adapted to your initial level of knowledge on the subject?**  
(Please **select/choose** one answer below)

Yes, absolutely    /                      Rather yes                      /                      Rather no                      /                      No, not at all

**11) Was the content of the module clear and relevant to you?** (Please **select/choose** one answer below)

Yes, absolutely    /                      Rather yes                      /                      Rather no                      /                      No, not at all

**12) According to you, the mental effort required to explore this module was** (Please **select/choose** one answer below):

very low  
low  
somewhat low  
moderate  
somewhat significant  
significant  
very significant

**13) According to you, understanding the links/sequences/connections between the different elements of the module (concept maps, knowledge sheets) was:** (Please **select/choose** one answer below)

very easy  
easy  
somewhat easy  
moderate  
somewhat difficult  
difficult  
very difficult

**14) According to you, the navigation through this module was** (Please *select/choose* one answer below):

very easy  
easy  
somewhat easy  
moderate  
somewhat difficult  
difficult  
very difficult

**15) Could you find again any information already read in this module** (Please *select/choose* one answer below) ?

Yes No

**16) The training exercises in this module were** (Please *select/choose* one answer below):

very easy / easy / somewhat easy / adapted / somewhat difficult / difficult  
very difficult

**17) Compared to a traditional class, do you prefer this online learning method offered by the digital pedagogical module explored** (Please *select/choose* one answer below) ?

Yes, absolutely / Rather yes / Rather no / No, not at all

**18) After exploring the module, do you think you have improved your knowledge and/or know-how/expertise about products and their design/engineering** (Please *select/choose* one answer below) ?

Yes, absolutely / Rather yes / Rather no / No, not at all

**19) After exploring the module, do you think you have improved your knowledge and/or know-how/expertise about processes and their modes of operation** (Please *select/choose* one answer below) ?

Yes, absolutely / Rather yes / Rather no / No, not at all

**20) After exploring the module, do you think you have improved your knowledge and/or know-how/expertise on models and simulators** (Please *select/choose* one answer below) ?

Yes, absolutely / Rather yes / Rather no / No, not at all

**All your additional comments are welcome (your learning experience, suggestions to improve MESTRAL:**