



MATHMET

Sharing best practices in MU training by METAS

17 – 18 May 2022



MATHMET



What makes the course unique

Experience from METAS (Marc-Olivier André)

- As little maths as needed in the PPT presentations, but supporting documents with more maths and references for the interested student
- Hands-on example supporting the course: determination of g with uncertainty evaluation
- Presentation of simplified methods like
 - variation principle instead of derivatives for determination of sensitivity coefficient
 - black-box approach to MU as alternative to complex mathematical modelling
- Practical tips on how to draft documentation, how to use a calculation program, etc.
- Case studies and practical examples for course on MU vs. conformity assessment
 - Critical to success: good hands-on examples
 - Attend the needs of an heterogeneous group

Main message

Take home message



Lessons learnt

Experience from METAS (Marc-Olivier André)

Main message

- Make clear and uniform notation and consistent to GUM ... difficult!
e.g. : x_i vs. X_i n vs. N x_i vs. q_k ...
- Include many exercises, case studies and application examples
- Provide occasions to regain lost people
- Make spontaneous connections to specific situations that can be linked to the audience.

Take home message

- Rigorous notation and adequate examples
- The overall course setting must be a pleasant experience: humor, decent food, ...



Tricks and tips

Experience from METAS (Marc-Olivier André)

Main message

- Address people's natural *a priori*: uncertainty analysis vs. error calculation:
- Remind the audience of the links between what has already been addressed and what's coming next: unravel a red wire
- Good alternance between theory and practice, examples, etc.
- Create an engaging atmosphere throughout the course, soft skills needed
 - Make sure that the participants can 'hold' onto a 'red wire'
 - The overall course setting must be a pleasant experience: humor, decent food, ...

Take home message



Idea or dream yet to fulfill

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Main message

- GUM should be improved with respect to hints as to the minimal requirements of a decent documentation
- Difficulty when addressing MU (JCGM-100) and conformity assessment (JCGM-106), i.e. frequentist vs. bayesian approach
- How to simply address the question of the appropriate use of $1/\sqrt{n}$...
- Find the ideal blend to address heterogeneous levels in classroom: scientist vs. technician

Take home message

- GUM can still be improved ...
- How to reach the 'perfect' classroom blend