

**INTED 2015**  
9th International Technology, Education and  
Development Conference  
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# How to use ICT to help students to gain in confidence and efficiency in an Algorithmic and computer programming course ?

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## Content of the presentation

- Previous situation
- New organization of the course
- Analysis of the blended process
- Conclusions

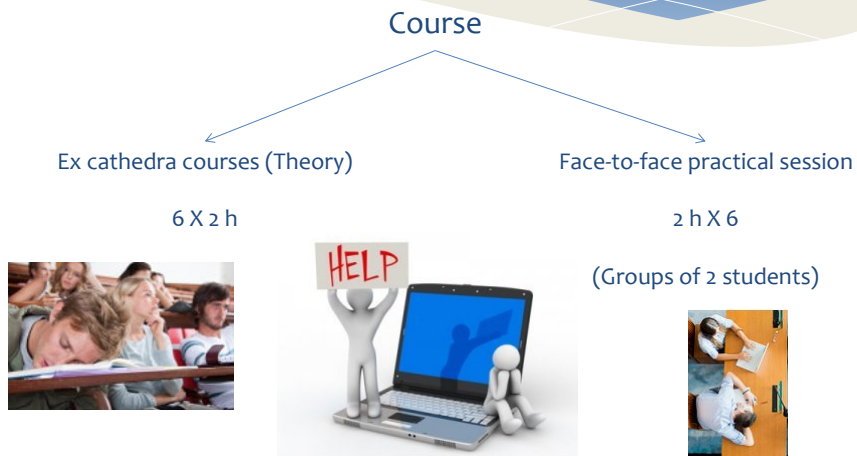
## Algorithmic and computer programming course

Large variety of tasks:

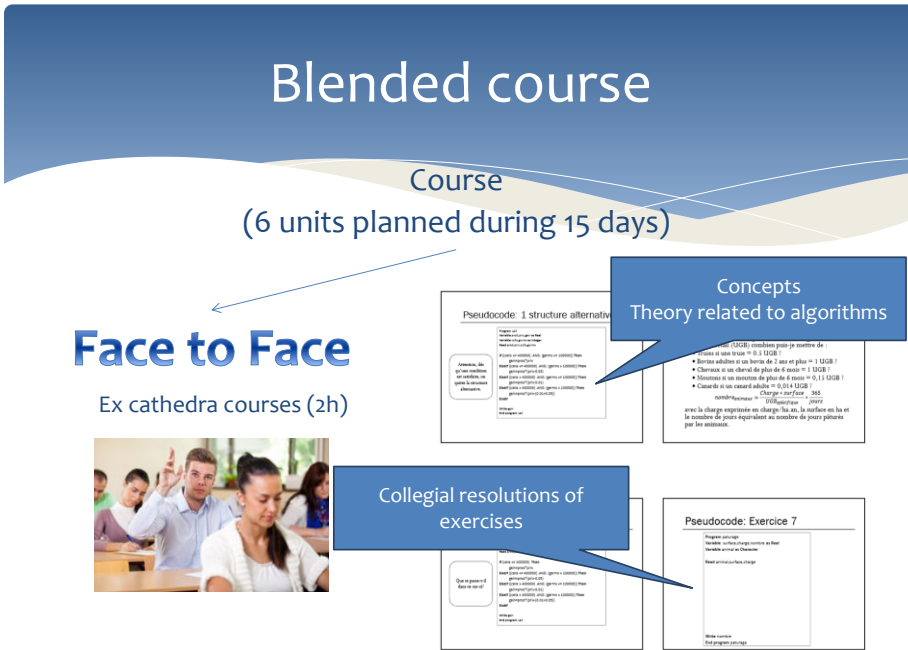
- \* Analyze the problem
- \* Structure the information
- \* Design reliable algorithms
- \* Translate those algorithms into a programming environment

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## Previous organization



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# Blended course

Course  
(6 units planned during 15 days)

## Face to Face

Ex cathedra courses (2h)



## Pedagogical resources

- Collection of corrected exercises
- Q & A specific to the course
- Online external resources
- Videos recorded by the teacher himself

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# Blended course

Course  
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## Face to Face

Ex cathedra courses (2h)



## Pedagogical resources

1 week

Fortran: Exercice 13

Calculer l'angle zénithal d'un point quelconque de la sphère céleste (par ex., le soleil). Cet angle correspond à la distance angulaire de ce point au point représentatif de la direction verticale ascendante du lieu (voir figure ci-dessous)

**Homework**

« integrative »

$\delta = 23.45^\circ + \sin(360^\circ \cdot \frac{284 + n}{365})$

Mar Audinet, 2013

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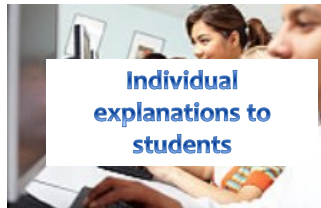
# Blended course

Course  
(6 units planned during 15 days)



Face to Face

Online activities



If the homework is submitted  
before the deadline set by the  
teacher

Q & A (2h)

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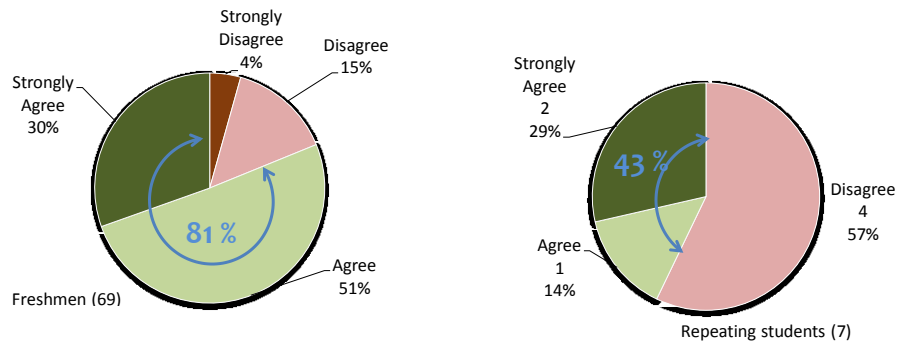
# Evaluation of the blended course

- \* Class of 147 of 3<sup>th</sup> Year bioengineering students
- \* Online questionnaire developed to assess student's perception of the new blended course
- \* Answers are measured on 4-point Likert Scale : 1: highest degree of interest ; 4 : Lowest degree of interest
- \* 107 fulfilled questionnaires but only 87 are complete (59 %)
  - 69 freshmen
  - 7 repeating students
  - 11 external students

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## Impact on motivation

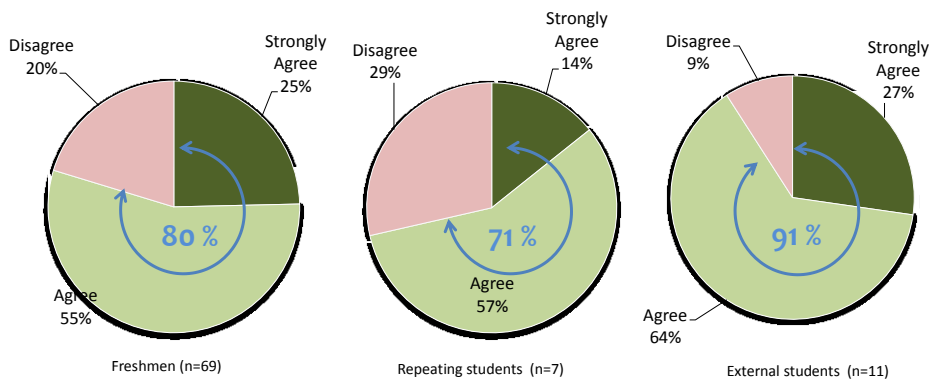
The alternation between face-to-face and virtual sessions punctuated by required homework leads students to engage themselves in learning (much more than in a classical ex cathedra course)



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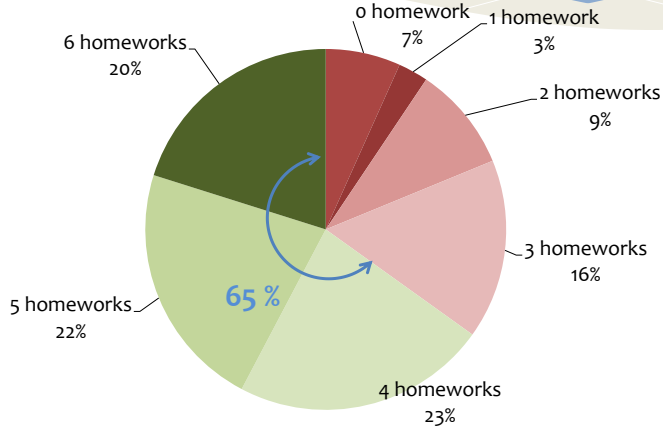
## Impact on motivation

The blended course encourages them to work more conscientiously



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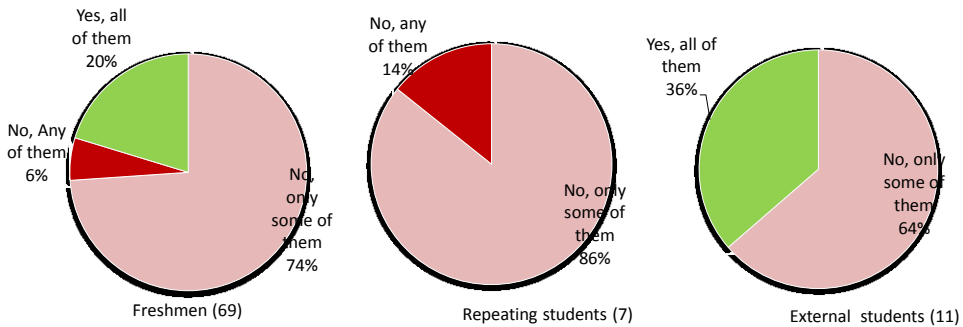
# Submitted homeworks



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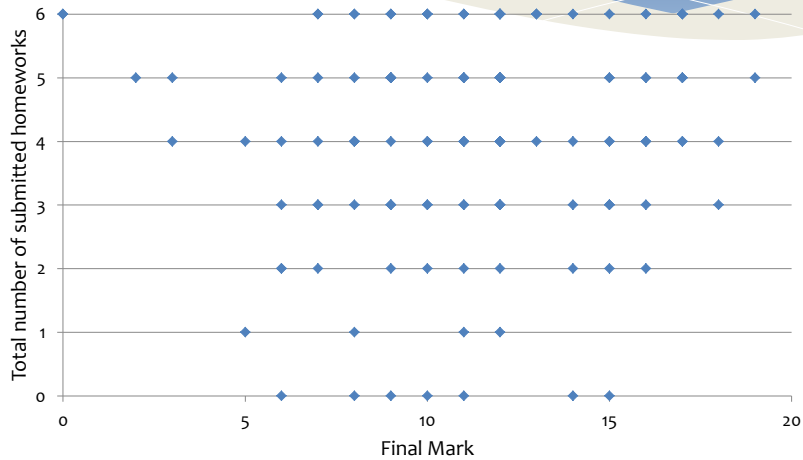
# Homework required ?

If the homeworks were not required, would you have made them ?



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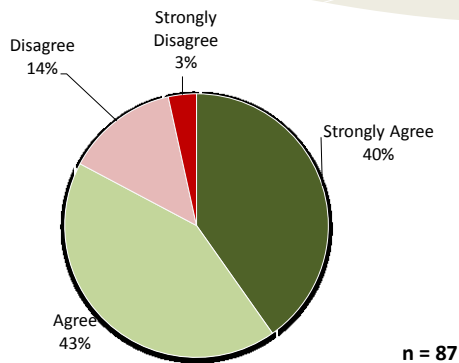
## Achieve homeworks ensures success ?



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## Relevancy of the Q&A sessions

Q&A sessions are relevant and effective



**BUT 29 % of repeating students and 3 % of freshmen suggest amending those Q&A sessions**

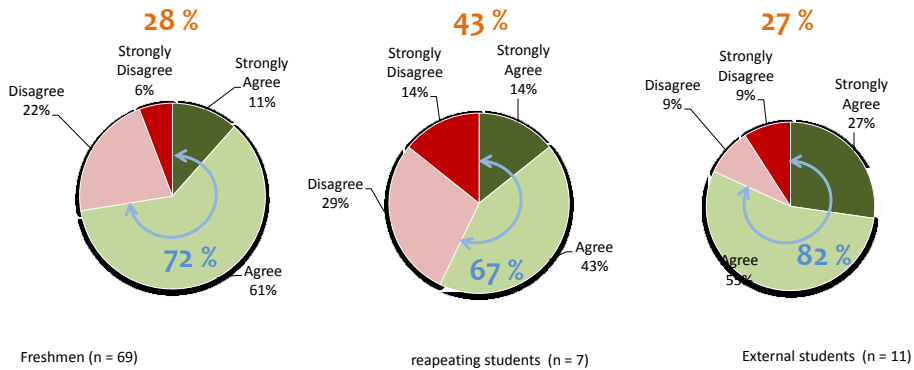
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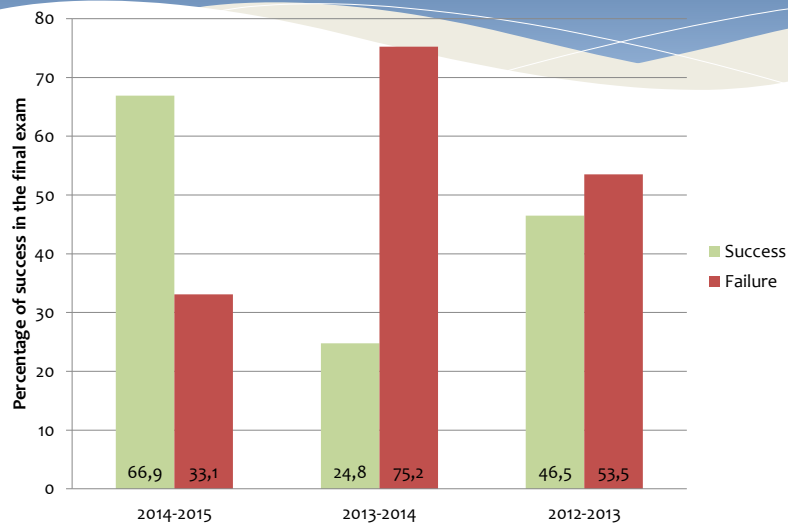
## Effectiveness of the blended learning

Does this blended course prepare you better to the final examination ?

Are you confident about the final examination ?



## Effectiveness of the blended learning



## Conclusions

- Blended learning leads to positive attitude towards the learning
- The teacher's role is modified
- Importance of the relation between the students and their teacher
- Helps students to plan their own learning
- Apparent heavy workload (point of view of students)

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