

EIDEIC 2019

Visual Impact Assessment of wind farms over large offshore areas

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1. INTRODUCTION
2. METHODOLOGY
3. RESULTS
4. COMPETENCES
5. CONCLUSION

Sci & tech

Technology

Results

Funding

Education

Sci. Criticism

Work Plan

Mobility

Ethics

Visual Impact
Assessment (**VIA**)



- ❑ Objective measurement of the potential changes that arise in available views

Visual Impact Assessment (VIA) ?

- Objective measurement of the potential changes that arise in available views

Why?

- Landscapes protection

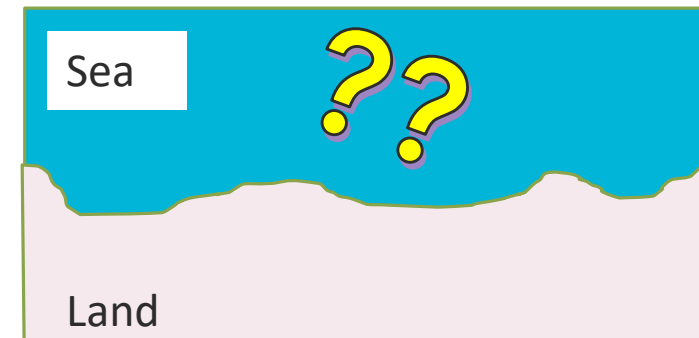


- Social opposition



Motivation

- To find the most suitable location to build an infrastructure
- To introduce visual impact criteria as a design factor.



2. METHODOLOGY

Sci & tech

Technology

Results

Funding

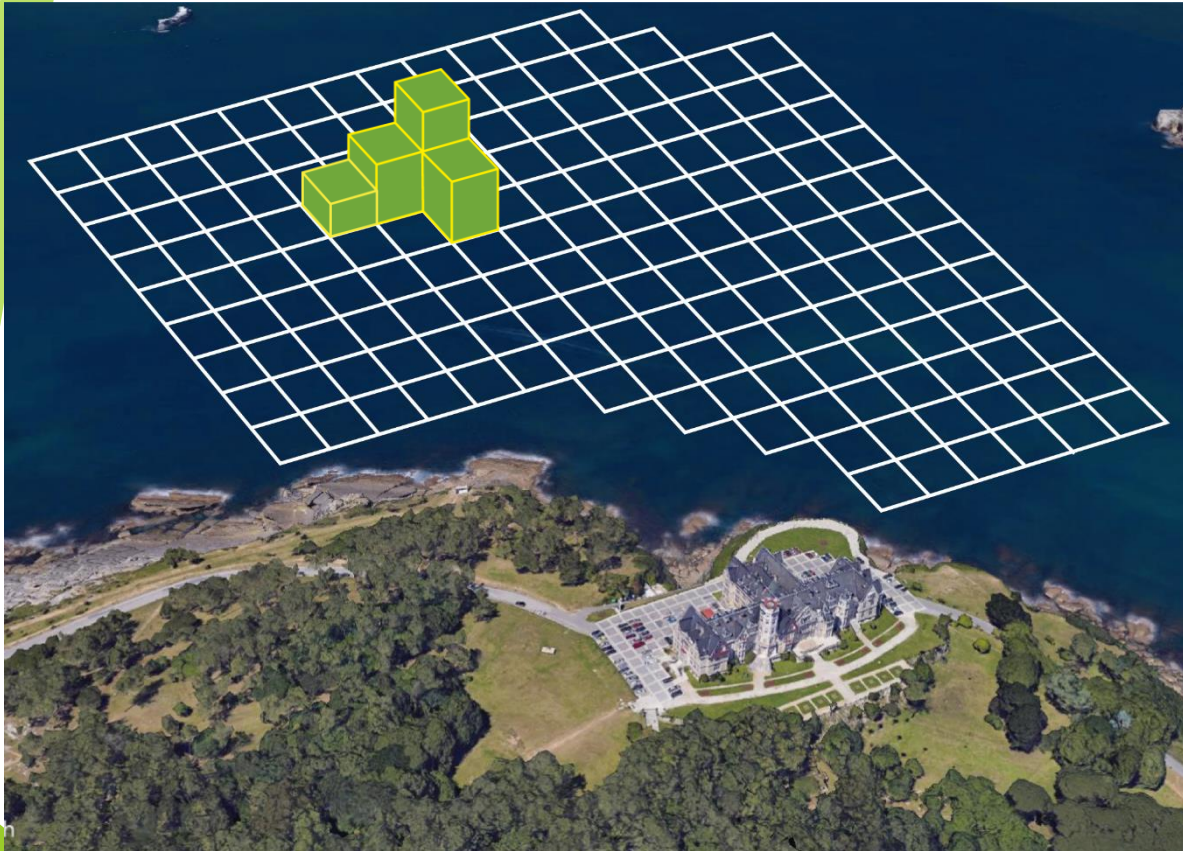
Education

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1. Define study area
2. Calculate visibility
3. Calculate visual impact indicators
4. Create Map

2. METHODOLOGY

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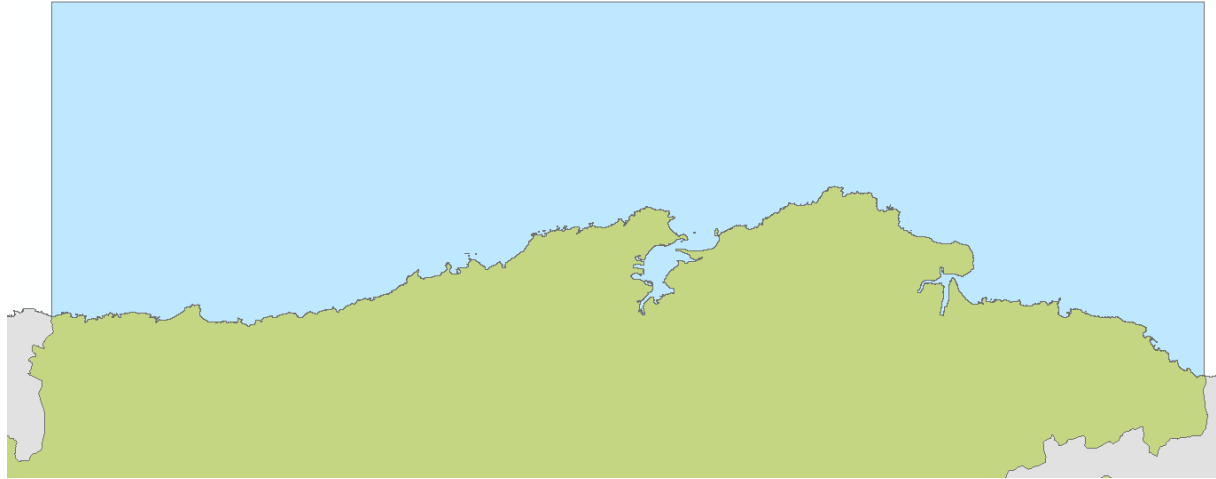
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Pixel size = 25 m → Number of pixels = 4.618.898

2. METHODOLOGY

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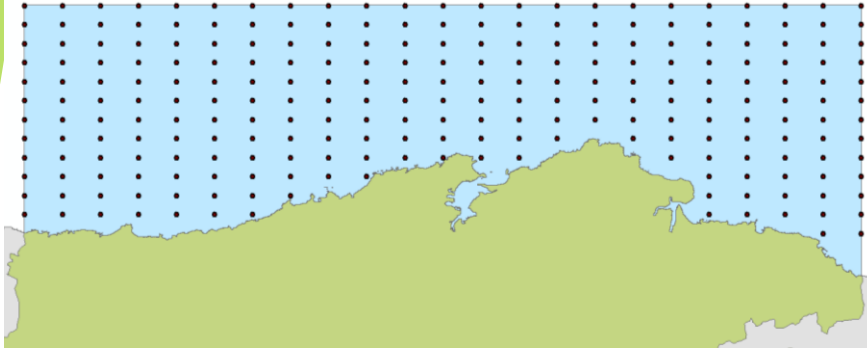
Sci. Criticism

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PC - Personal Computer



VB.NET

Time calculation



Selection of set of points



Interpolation

2. METHODOLOGY

Sci & tech

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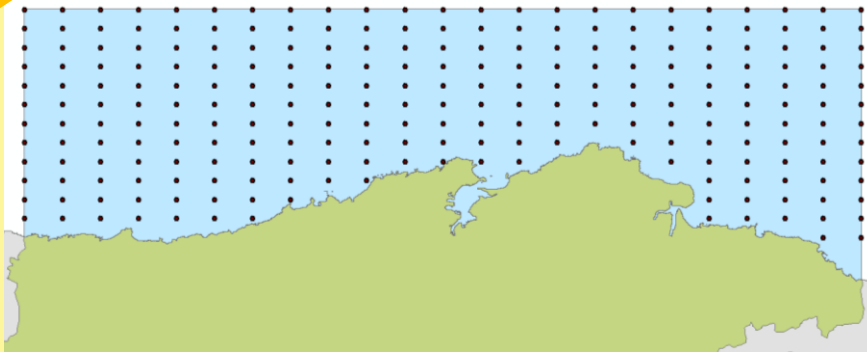
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Ethics

1st year

PC - Personal Computer



VB.NET

Time calculation



Selection of set of points



Interpolation

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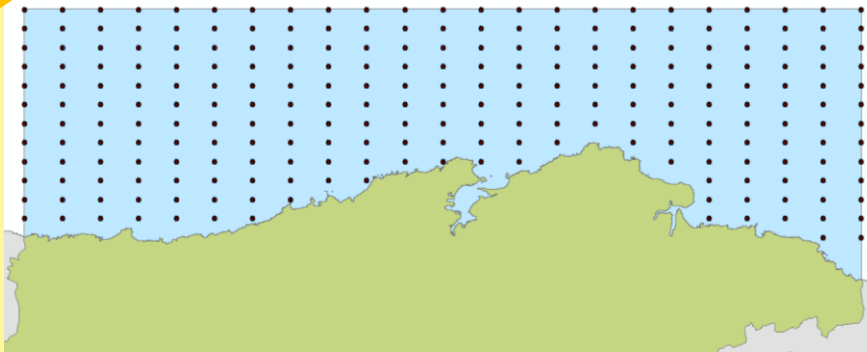
Work Plan

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1st year

PC - Personal Computer



Time calculation



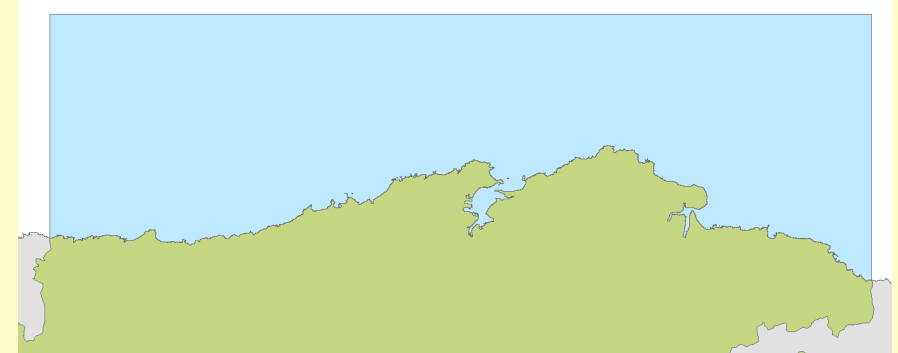
Selection of set of points



Interpolation

2nd year

HPC - High Performance Computing



Points 4.618.898



Parallel algorithm techniques

ALTAMIRA

Spanish Supercomputing Network (RES)

Unique Scientific and Technical Infrastructures (ICTS)

3. RESULTS

Sci & tech

Technology

Results

Funding

Education

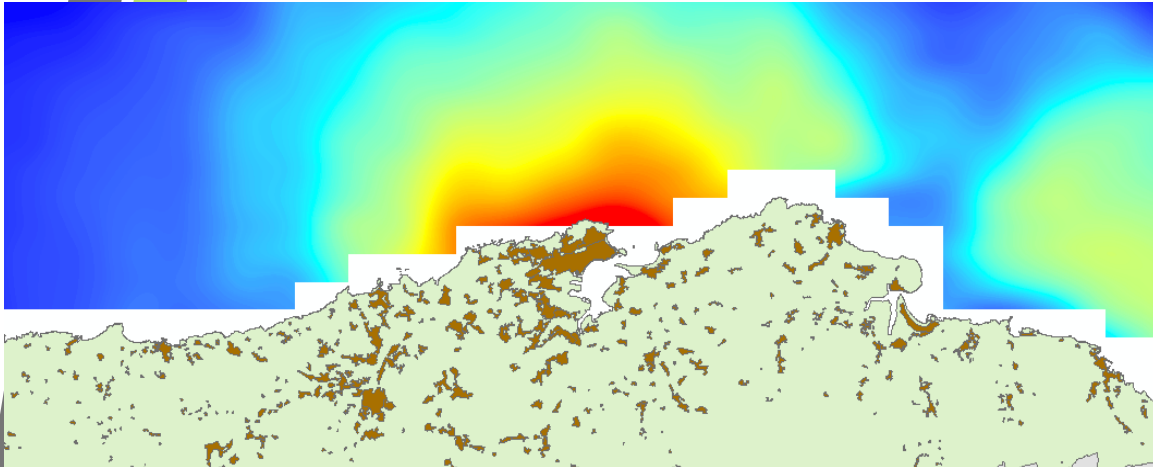
Sci. Criticism

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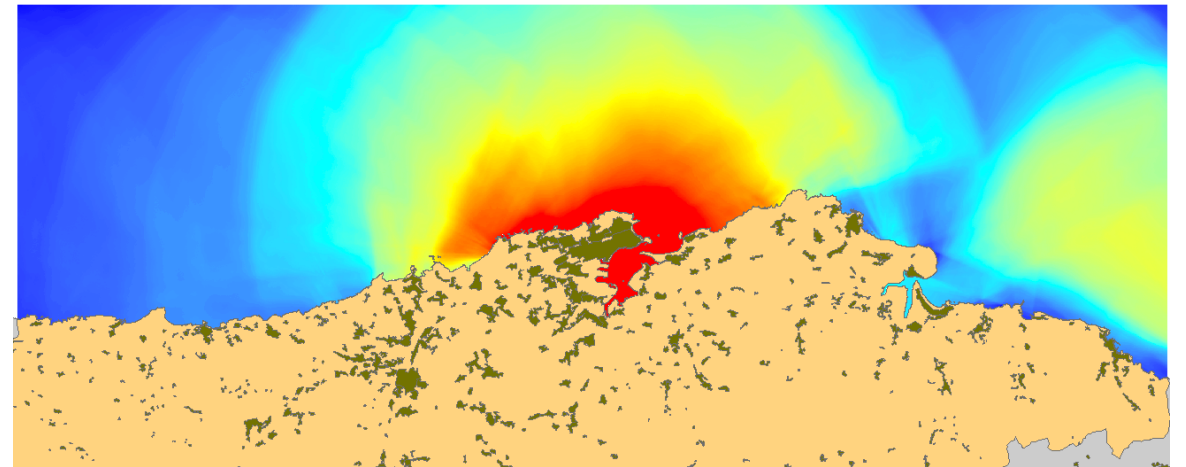
PC - Personal Computer



240 points + Interpolation

Time 1,5 hours

HPC - High Performance Computing

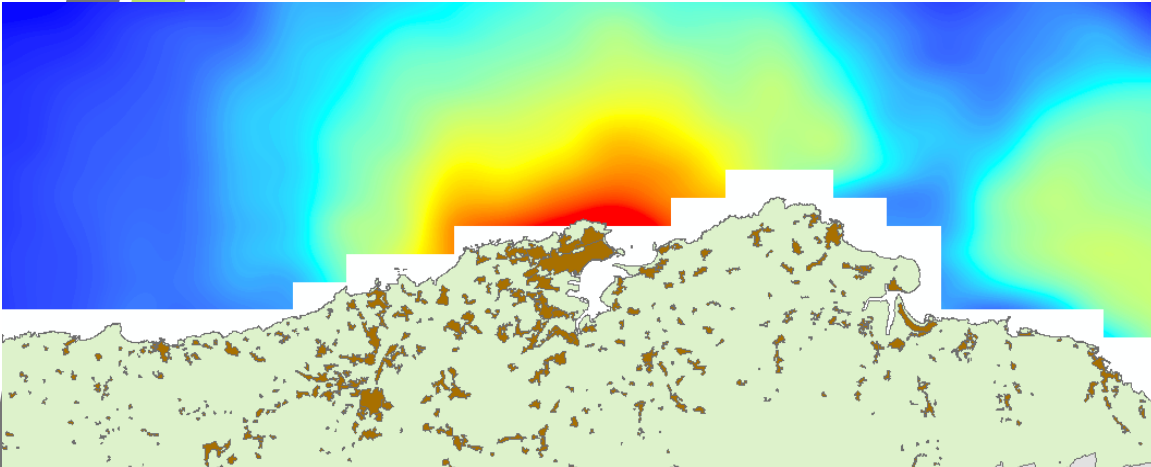


Points 4.618.898

Time 4 hours

Sci & tech	Technology	Results	Funding	Education	Sci. Criticism	Work Plan	Mobility	Ethics
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PC - Personal Computer



SODERCAN
Sociedad para el Desarrollo Regional de Cantabria

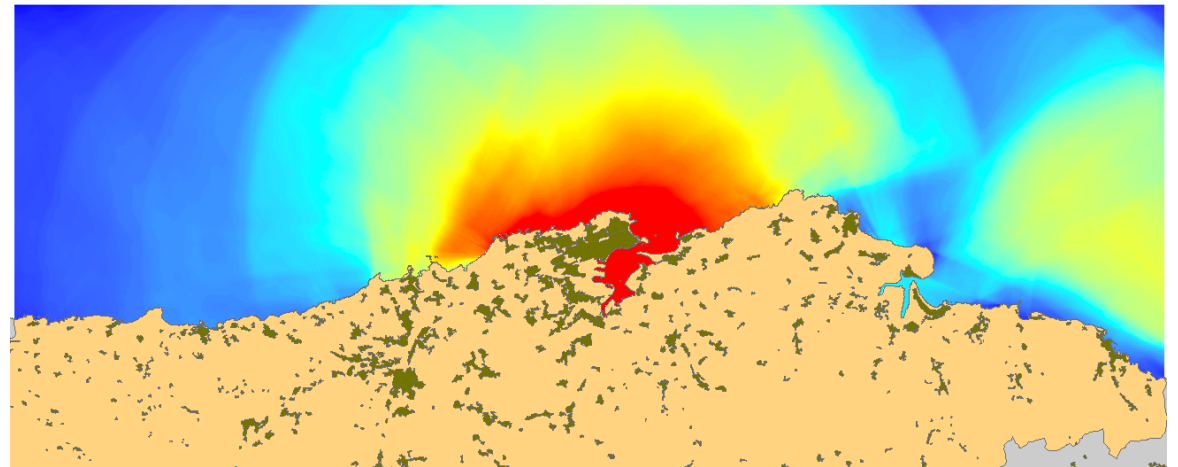
GOBIERNO de CANTABRIA
CONSEJERÍA DE UNIVERSIDADES E INVESTIGACIÓN, MEDIO AMBIENTE Y POLÍTICA SOCIAL

I+C=+C

FEDER
Fondo Europeo de Desarrollo Regional
Unión Europea
Una manera de hacer Europa

I+C=+C 2016 call – Cooperation in I+D projects in offshore energy renewable (RM16-XX-045)

HPC - High Performance Computing



IBERDROLA

Ayudas a la investigación en energía y medioambiente 2018

Conferences:

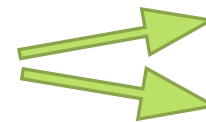
International Joint Conference on Mechanics, Design Engineering and Advanced Manufacturing (JCM2018), June 2018

Published papers:

LÓPEZ-URIARTE J., LIZCANO P.E., MANCHADO C., GÓMEZ-JÁUREGUI V., OTERO C. (2019) "Visual Impact Assessment for Offshore Wind Farms Along the Cantabrian Coast".. Lecture Notes in Mechanical Engineering. Springer, Cham. Pp: 235-241. ISBN: 978-3-030-12345-1. Online ISBN: 978-3-030-12346. DOI: [10.1007/978-3-030-12346-8_23](https://doi.org/10.1007/978-3-030-12346-8_23)

GUINDA, X., PUENTE, A., JUANES, J. A. , ROYANO, F., FERNÁNDEZ, F., VEGA, M. A., GARCÍA, A., GARCÍA, J., ARAGÓN, G., ABASCAL, A. J., OTERO, C., MANCHADO, C., GOMEZ-JAUREGUI, V., LÓPEZ, J., MONTEOLIVA, A. (2018) "AMBEMAR-DSS: A Decision Support System For The Environmental Impact Assessment Of Marine Renewable Energies". Proceedings of the International Conference on Offshore Mechanics and Arctic Engineering - OMAE ASME 2018. Volume 6: Ocean Space Utilization. Paper No. OMAE2018-78002, pp. V006T05A018; 10 pages. Madrid (Spain). ISBN: 978-0-7918-5125-8. doi: 10.1115/OMAE2018-78002

Currently 2 have been sent for its revision



Dyna (JCR - Q4)

Applied Energy (JCR - Q1)

Sci & tech

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Courses:

EDUC Basic and Advanced Training Courses

- What, Why & How. Your Road to Entrepreneurship (30 hours)
- Writing your PhD Thesis (20 hours)
- Ciencia y sociedad: divulga y comunica (9 hours)
- Evaluación de la investigación: herramientas e indicadores (8 hours)
- Elaboración de proyectos de investigación (10 hours)
- El emprendimiento (6 hours)
- Tips for getting published (2 hours)
- Propiedad Intelectual y plagio: conceptos y herramientas de control (8 hours)
- Iniciación a la investigación: colaboración público-privada en proyectos de I+D+i (3 hours)

CIUC English C1.1 course (90 hours)

MOOCS in Statistics:

- Introduction to Probability and Data (25 hours)
- Linear Regression and Modeling (20 hours)
- Inferential Statistics (25 hours)

Others activities:

C++ with OpenMP and MPI libraries

4. COMPETENCES

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Work Plan

Improve
english skills

Asist to a
conference

Further study of
state of art

Compare MarRojo vs
HPC results

Registration of
MarRojo Software

Mobility (3 months - Currently)

- ❑ GAP reserach group – Università Politecnica delle Marche



UNIVERSITÀ
POLITECNICA
DELLE MARCHE

3. CONCLUSION

BASIC SKILLS	2. Science & technique	3. Technology	4. Educational	5. Results	6. Scientific Criticism	7. Work Plan	8. Mobility	9. Funding	10. Ethics
CB11	✓	✓	✓						
CB12				~		✓	~		
CB13				~					
CB14					~				
CB15				~			~		
CB16				✓					✓

CB11 – Understanding of a field of study and skills and research methods related to the field.

CB12 – Skill to conceive, design or create, implement and adopt a substantial process of research or creation.

CB13 – Skill to contribute to the enlargement of the knowledge limits through an original research.

CB14 – Skill to carry out a critical analysis and assessment and synthesis of new and complex ideas.

CB15 – Skill to communicate with the academic and scientific community and with society in general.

CB16 – Skill to encourage the scientific, technological, social, artistic or cultural progress

3. CONCLUSION

CAPACITIES & PERSONAL ABILITIES	2. Science & technique	3. Technology	4. Educational	5. Results	6. Scientific Criticism	7. Work Plan	8. Mobility	9. Funding	10. Ethics
CA01	✓	✓	✓						
CA02				✓					
CA03						✓		✓	
CA04			~				~		
CA05	✓	✓	~						
CA06					~				

CA01 – Cope in contexts in which there is little specific information.

CA02 – Find the key questions to be answered to solve a complex problem.

CA03 – Design, create, develop and undertake new and innovative projects in the knowledge scope.

CA04 – Work both in teams and individually in an international or multidisciplinary context.

CA05 – Integrate knowledges, face complexity and formulate judgements with limited information.

CA06 – Intellectual criticism and defence of solutions.



THANK YOU FOR YOUR
ATTENTION

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