Exact algorithms for NP-complete and hard problems

**ECTS** : 3

**Volume horaire** : 15

**Description du contenu de l'enseignement :**

The course presents the main techniques and tools for the design and analysis of exact algorithms for NP-complete/hard problems, as well as examples of applications of such algorithms and techniques.

**Compétence à acquérir :**

- Exact solution methods (Dynamic programming, Search trees, Enumeration, Inclusion - exclusion, Local search) and tools for their complexity evaluation
- Applications (Coloring, TSP, Independent Set, Cut, Set Covering)
- Techniques for the design of parameterized algorithms (Kernelization, Search trees, Random separation, Color coding, etc.)
- Applications (Vertex cover, Feedback vertex set, k-Covering, etc.)

**Bibliographie, lectures recommandées :**


- Exact solution methods (Dynamic programming, Search trees, Enumeration, Inclusion - exclusion, Local search) and tools for their complexity evaluation
- Applications (Coloring, TSP, Independent Set, Cut, Set Covering)
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