

**PROGRAM OF ADVANCED MASTER IN INNOVATIVE DESIGN  
2011 – SESSION 8**

*Academic responsible: Sébastien DUBOIS*

| <b>ACADEMIC LECTURES :</b> |   | <b>413 Hours</b> |
|----------------------------|---|------------------|
| <b>MODULE 1:</b>           | <b>INNOVATION PROCESS</b><br><i>Resp. Nathalie GARTISER</i>   | <b>[35 H]</b>    |
|                            | <ul style="list-style-type: none"> <li>• Think complexity: systemic approach modelling</li> <li>• Economics &amp; innovation management.</li> <li>• Methods to assist the design process</li> <li>• Innovative thinking: psychology and sociology for creativity</li> </ul>   |                  |
| <b>MODULE 2:</b>           | <b>INDUSTRIAL PROPERTY</b><br><i>Resp. Yves REBOUL</i>  | <b>[35 H]</b>    |
|                            | <ul style="list-style-type: none"> <li>• Patents</li> <li>• Trends</li> </ul>   |                  |
| <b>MODULE 3:</b>           | <b>PROJECT TEAM MANAGEMANT &amp; COMMUNICATION</b><br><i>Resp. David OGET</i>   | <b>[35 H]</b>    |
|                            | <ul style="list-style-type: none"> <li>• Project team definition</li> <li>• Subjective communication &amp; operational communication inside the team</li> <li>• Objectives and models management</li> </ul>   |                  |
| <b>MODULE 4:</b>           | <b>BASIC PRINCIPLES OF TRIZ</b><br><i>Resp. Denis CAVALLUCCI</i>  | <b>[35 H]</b>    |
|                            | <ul style="list-style-type: none"> <li>• Positioning in regard of product design problematic</li> <li>• Historical aspects of TRIZ foundations</li> <li>• Elementary notions to apply TRIZ</li> <li>• First level resolution tools</li> </ul>   |                  |
| <b>MODULE 5:</b>           | <b>TOOLS &amp; METHODS OF TRIZ</b><br><i>Resp. Denis CAVALLUCCI</i>   | <b>[35 H]</b>    |
|                            | <ul style="list-style-type: none"> <li>• TRIZ and systemic thinking</li> <li>• Laws of evolution for technical systems</li> <li>• Algorithm of Resolution for Inventive Problems (ARIZ)</li> <li>• Coherence between tools</li> </ul>   |                  |
| <b>MODULE 6</b>            | <b>ANALYSIS OF INITIAL SITUATION</b><br><i>Resp. Cecilia ZANNI</i><br><i>Teachers. Cecilia Zanni, Denis Cavallucci, Dmitry Kucharavy</i>  | <b>[35 H]</b>    |
|                            | <ul style="list-style-type: none"> <li>• Transform a fuzzy initial situation into a specific problem, with aim to reduce the solution space and to engage a solving process to find solution concepts.</li> <li>• Prospective analysis</li> <li>• Systemic modeling: <ul style="list-style-type: none"> <li>➢ Introduction to systemic, structural, functional and behavioral axis</li> <li>➢ UML &amp; SysML</li> </ul> </li> <li>• Problem graph and graphs theory</li> </ul> |                  |
| <b>MODULE 7:</b>           | <b>THEORY &amp; PRACTICE OF ARIZ</b>  | <b>[35 H]</b>    |

*Resp. Sébastien DUBOIS*  
*Teachers. Sébastien DUBOIS, Dmitry KUCCHARAVY*

- Contradictions evolution in the problem resolution process
- Main idea to solve contradictions
- Notion of technical systems evolution
- Notion of contradictions

**MODULE 8:      ADVANCED PRACTICE OF ARIZ**

*Resp. Dmitry KUCCHARAVY*  
*Teachers. Sébastien DUBOIS, Dmitry KUCCHARAVY*

**[35 H]**

- Identification of the information to collect in order to well formulate and to solve the problem
- Practice of ARIZ steps with systemic view of the method
- Coherence between analysis of initial situation steps and ARIZ
- ARIZ-85C

**MODULE 9:      META-COGNITIVE APPROACH OF DESIGN**

*Resp. Patrick FILIZIAN*  
*Teachers. Marc BARTH, Nathalie GARTISER, Patrick FILIZIAN*

**[35 H]**

- Identification of the common concepts of the design methods
- To be able to translate these inter-methods concepts
- Design methods state of the art
- Ontological analysis of design methods

**MODULE 10:    OPENNESS SEMINARS**

*Resp. Roland DE GUIO*

**[35 H]**

- To be able to recognize the application opportunities in different context of the problem solving methods tackled during the master.
- Presentation of different developments linked with the problem solving methods or the innovation management. Focus on the last researches in the domain.

**MODULE 11:    PROJECT MODULE**

*Resp. Denis CAVALLUCCI*

**[35 H]**

- Methodological practice of the theoretical knowledge developed in previous modules
- Problem graph building
- Specific problem choice
- Structure meetings and time between meetings un order to collect and reshape the industrial project information
- Clearly and didactically present its industrial project in its partial state during intermediary defence

In border of the Advances Master, an industrial project of at least 200 hours is required to validate the theoretical knowledge by the practice on a real case in link with the professional domain of the student.

To help the student in this task, the module is structured in a way that several teachers will deliver time to fit with students needs. The objective is to help each student in the advancement of his project.

**PROFESSIONAL PROJECT**

*Resp. Roland DE GUIO*

**[28 H]**

Each student will be coached and helped by one referent teacher.