**Decision Support: Study Requirements and Procedure**

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**Purpose and Goals**

- General understanding of Decision Support:
  - decision making and decision support: areas and disciplines
  - decision process
  - components of decision making
  - Decision Analysis:
    - modeling methods and techniques
    - decision making under risk and uncertainty
    - decision tables, decision trees, influence diagrams
    - multi-attribute models: MAUT, AHP, DEX
  - Advanced Topics:
    - integration of decision trees, influence diagrams and multi-criteria models
    - integration of data mining and decision modeling
    - integration of qualitative and quantitative modeling
    - machine learning and revision of decision models
  - Acquiring practical skills for decision modeling and solving complex decision problems

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**Required Reading**

1. Main sources:
   a. for Slovene-speaking students:
      - Chapters: required 1-3 & 9-14, recommended 8 & 15-17.
   b. for English-speaking students:
      - + other literature covering equivalent topics (determined individually)

2. Course slides in English: [http://kt.ijs.si/MarkoBohanec/DS/DS.html](http://kt.ijs.si/MarkoBohanec/DS/DS.html)

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**Supplementary Reading**

For further information, see the Web page: [http://kt.ijs.si/MarkoBohanec/DS/DS.html](http://kt.ijs.si/MarkoBohanec/DS/DS.html)

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**A Typical Practical Assignment**

1. Define your own decision problem (possibly real-life, about 15-20 attributes, 5-10 alternatives) [consult the professor about decision problem]
2. Select two decision modeling methods (e.g. decision tree, influence diagram, Kepner-Tregoe, AHP, DEX, ...)
3. Solve the problem using the methods: develop two models, evaluate and analyse alternatives, compare and assess the results
4. Write a report and submit it to your professor
5. Once approved, prepare a presentation and publicly present your work
Issues to be Addressed in the Report

In general, the report and presentation should address the following:

- Description of the decision problem, aims and goals of the decision
- Description of the developed model: attributes, utility functions
- Description of alternatives
- Utilisation of the model: evaluation of alternatives, sensitivity and/or what-if analysis
- Summary of the decision-making process, lessons learned
- Appendix: include printout of the model

Requirements and Procedure

- Each student is required to make their Practical Assignment and write a report.
- The report must be sent by e-mail to marko.bohanec@ijs.si no later than the last Friday, 12:00 a.m., before the presentation/examination event. Sending reports for earlier previews is encouraged.
- A final printed version of the report must be handed to the examiner before presentation.
- Examinations consist of two parts:
  - A written exam with questions addressing topics from the required literature (from both a theoretical and practical viewpoint).
  - A 10-15 minutes oral defense of each student’s seminar work (preferably accompanied by PowerPoint slides).
- For passing the examinations, both parts have to be evaluated positively. Each part contributes 50 % to the final evaluation.