

Individual Assignment

Deadline for report: Wednesday, 20th July 2022, 23.59 CET
 Deadline for peer grading: Wednesday, 27th July 2022, 12.00 CET (noon)

General information - READ CAREFULLY

- This assignment is part of the overall assessment of this course and, therefore, your answer counts for the final grade.
- This assignment must be solved by every student individually and submitted before the above mentioned deadline closes. Group work is not allowed.
- The assignment has to be submitted via DTU Learn using the PeerGrade System. Use the entry `PeerGrade` in the course content and upload your files to the corresponding assignment. Be careful to select the right category (depends on the paper you choose).
- The submission must consist of one pdf-document containing the answers to the questions below.
- If you want to be graded anonymously by your peers then do not include your name in the PDF or filename.

Task

In this individual assignment, we will focus on applied research in decision-making under uncertainty. Based on the contents of the lectures, you should be able understand the content of the papers as well as critically analyze the methodology and results .

1. Choose one of the papers below and read it. Log in to findit.dtu.dk to access the papers.

Paper A:

Alvarez, Pamela P.; Vera, Jorge (2011): *Application of Robust Optimization to the Sawmill Planning Problem*; Annals of Operations Research — 2011, pp. 1-19 <https://findit.dtu.dk/en/catalog/5441ff52acc4e2154d4060d2>

Paper B:

Pandzic, Hrvoje; Morales González, Juan Miguel; Conejo, Antonio J.; Kuzle, Igor (2013): *Offering model for a virtual power plant based on stochastic programming*, Applied Energy — 2013, Volume 105, pp. 282-292 <https://findit.dtu.dk/en/catalog/537f107874bed2fd2100d5b8>

Paper C:

Stålhane, Magnus; Vefsnmo, Hanne; Halvorsen-Weare, Elin E.; Hvattum, Lars Magnus; Nonås, Lars Magne (2016): *Vessel Fleet Optimization for Maintenance Operations at Offshore Wind Farms under Uncertainty* Energy Procedia — 2016, Volume 94, pp. 357-366 <https://findit.dtu.dk/en/catalog/585018000e5dc8952d01cdc1>

2. Answer the following tasks/questions in your report. The report should not be longer than 2 pages.
 - (a) State the bibliographic information of the chosen paper (author, year, title, journal) .
 - (b) In your own words, give a short summary of the planning problem that is addressed in this paper.
 - (c) In your own words, give a short summary of the methodology that is applied in this paper.
 - (d) Briefly answer: Do you think the chosen optimization methodology (robust optimization or stochastic programming) is appropriate for the planning problem? Why or why not?
 - (e) What are the uncertain components of the planning problem and how is the uncertainty modelled?
 - (f) In this task focus on the input data handling for the uncertainty, i.e., scenarios or uncertainty sets. Do you think the description and modelling of the uncertainty is appropriate (e.g. Is enough information given on how the uncertainty representation is determined based on data for the particular case? Was the right approach for uncertainty modelling chosen in your opinion? Was the quality ensured by some analysis?, ...).

- (g) Briefly judge the quality of the numerical experiments and analysis of the solution (e.g. Is the analysis extensive enough? Are there aspects missing? Do you have suggestions for improvement?, ...)
3. Submit your report to PeerGrade before **Wednesday, 20th July 2022, 23.59 CET**. Choose the submission category of your paper.
 4. Grade the reports of the 3 other students (that read the same paper) according to the rubrics given in PeerGrade before **Thursday, 27th July 2022, 12.00 CET (noon)**.
 5. You might want to go through the feedback of your peers and flag if you disagree latest by **Friday, 29th July 2022, 23.59 CET**.