

Stochastic Programming

LNMB PhD course 2023-2024

Lecturer:

Dr. W. Romeijnders (University of Groningen)
phone: 050 363 3923
e-mail: w.romeijnders@rug.nl
website: <https://www.rug.nl/staff/w.romeijnders/>



Literature:

W.K. Klein Haneveld, M.H. van der Vlerk, and W. Romeijnders, 2020. *Stochastic Programming - Modeling Decision Problems Under Uncertainty*, Graduate Texts in Operations Research, Springer.

On-campus Lectures:

Time: Monday 15.15 – 17.00
Lectures 1,5,9 (March 4, April 8, May 6)
Hans Freudenthalgebouw, Room HFG611, Budapestlaan 6, Utrecht (the Uithof).

On-line Lectures:

Time: Monday 15.15 – 17.00
Lectures 2,3,4,6,7,8 (March 11 - March 25, April 15 - April 29).
Link: Teams meeting
Meeting ID: 341 366 810 284
Passcode: UG7Y6W

Online lectures will be recorded and made available on SurfDrive. Also the slides of the lectures will be uploaded there after the lectures.

Home work:

Students have to work out **in groups of two**:

- a. Exercises on recourse models: R1 and R3 from Chapter 7
Deadline: Friday March 29, 23.59.
Hand in via: <https://surfdrive.surf.nl/files/index.php/s/YExU8jdrRmfXgCI>
- b. Exercises on chance constraints: C4 and C5 from Chapter 7
Deadline: Monday April 22, 15.15.
Hand in via: <https://surfdrive.surf.nl/files/index.php/s/UskLT9WbbuygZIA>
- c. A case study on an application of stochastic programming. Students may select one of the cases in Sections 8.1–8.7 from Chapter 8.
Deadline report: Tuesday May 21, 23.59.
Hand in via: <https://surfdrive.surf.nl/files/index.php/s/V4eC8A2E7qDBmwv>

(Please keep in mind that surfdrive uses very minimal texts when uploading. All you will see is a tiny text saying “Uploaded files” and the name of your file. **Please keep in mind that all uploads are anonymous.** The advantage is that you can use this folder even if you are not a surfdrive user. However, **you have to make sure that your information is in the text of your file, and in the file name too.**)

Grades:

The final grade G will be determined on the basis of the home work exercises (E_1 and E_2) and the case study (C) as follows:

$$G = \frac{25E_1 + 25E_2 + 50C}{100}$$

Tentative schedule of the lectures:

Date	Subject	Literature
4-3	: Organization course + introduction SP	Ch. 1 + slides
11-3	: Formulations recourse; properties EVF simple recourse	3.1 – 3.2.3, 3.2.3 – 3.3.3
18-3	: Properties EVF complete recourse + L-shaped algorithm	3.3.1, 3.4
25-3	: Bounds for recourse models	3.3.4–3.3.5 + slides
1-4	: <i>No lecture: Easter Monday</i>	
8-4	: Chance constraints: examples + properties	5.1 – 5.3
15-4	: Integrated chance constraints	Ch. 6
22-4	: Stochastic integer programming	Ch. 4 + slides
29-4	: Stochastic integer programming	Ch. 4 + slides
6-5	: Guest lecture Ruben van Beesten (EUR) on Risk-averse SP	slides