# Short manual RRP

## Installation of Python

1. Install Python (x,y)
   - Install latest Python (x,y) version from https://python-xy.github.io/

## Calibration

1. Open “calibration.py”

2. Specify calibration options (lines 21-44)
   - Specify if drainage data is used
   - Specify if calibration results should be saved
   - Specify number of Monte-Carlo Runs per iteration
   - Specify number of iterations
   - Specify lag factor (lag between precipitation and discharge response)
   - Specify start of simulation
   - Specify behavioral threshold

3. Specify paths and input files (lines 48-70)
   - Specify path of input and output folders
   - Specify name of climate input data
   - Specify name of observed discharge data
   - Specify name of TWI map
   - Specify name of HRU map
   - Specify name of drainage probability map

4. Specify parameter boundaries (lines 118-148)

5. Specify initial soil water content (line 176)

6. Specify names of results files (line 314-315)

7. Run “calibration.py”

## Evaluation and file generation for Phosphorus module

8. Open “evaluation.py”

9. Specify evaluation options (lines 17-28)
   - Specify if overland flow files should be generated (needed for phosphorus module)
   - Specify if drainage data is used
   - Specify lag factor (lag between precipitation and discharge response)
   - Specify start of simulation

10. Specify paths and input files (lines 31-70)
    - Specify path of input, calibration and overland flow folders
    - Specify names of calibration results
    - Specify name of climate input data
    - Specify name of observed discharge data
    - Specify name of TWI map
    - Specify name of HRU map

11. Specify initial soil water content (line 146)

12. Run “evaluation.py”

## Phosphorus module

13. Open “model_P.py”

14. Specify paths and input files (lines 17-55)
    - Specify path of input, calibration and overland flow folders
    - Specify name of TWI map
    - Specify name of HRU map
    - Specify if soil phosphorus map is available, if yes specify name

15. Specify phosphorus module parameters (lines 87-89)
    - Specify parameter “new water fraction”
    - Specify baseflow phosphorus concentration
    - Specify time step for generation of hydrological risk map

16. Specify output names (lines 193-222)
    - Specify name of HRU map
    - Specify name of file “hourly concentration”
    - Specify name of file “hourly loads”
    - Specify name of file “hourly discharge”
    - Specify name of file “hydrological risk map”

17. Run “model_P.py”