

# Option Pricing

332124023/MA ECON AM FIE OPTPR



## Content and learning outcomes

|                          |   |
|--------------------------|---|
| <b>Content</b>           | The course presents the pricing and hedging of options in the continuous time model by Black and Scholes. The model dependency of the perfect duplication strategy and its applications to risk management will be discussed. This includes a discussion of the differences between dynamic hedging strategies and static or robust hedging. Beside standard options the pricing of more complex financial contracts will be analysed. Numerical approximations like the Monte Carlo method will be applied to these contracts. |
| <b>Learning outcomes</b> | The course aims to provide students with an understanding of the Black and Scholes option pricing model. It enables them to recognize the significant role of risk neutral pricing as the basis of modern option pricing theory. Students learn to apply the technique including numerical methods of risk neutral pricing to nonstandard financial products and to review the hedging strategies with respect to the risk management of options.   |

## Teaching and learning methods

| Type of course/learning methods | Topic          | Language of instruction | Group size | Contact time | Workload [h] |
|---------------------------------|----------------|-------------------------|------------|--------------|--------------|
| Lecture                         | Option Pricing | English                 | open       | 4 hours      | 60           |
| Self-study                      |                |                         |            |              | 165          |

## Prerequisites

|                    |                             |
|--------------------|-----------------------------|
| <b>obligatory</b>  | none                        |
| <b>recommended</b> | Basic Module <i>Finance</i> |

## Degree program allocation

| Study Program   | obligatory/<br>elective | Semester |
|---|-------------------------|----------|
| Master of Science Economics<br>Study Field: Financial Economics | elective                | 2nd      |
| Master of Science Mathematics                                   | elective                | 2nd      |

## Requirements for the awarding of credit points (ECTS)

| Requirements for the awarding of credit points (ECTS)                                      |   | Credits |
|--|---|---------|
| <b>Prerequisites for participation</b>   | none  | 7,5 CP  |
| <b>Types of Assessment (graded, incl. weighting factor)</b><br><b>Examination language</b> | Written or oral exam or term paper (graded, 100%) - English |         |

| Course Cycle  | Workload     | Duration      |
|---|--------------|---------------|
| Winter term <input type="checkbox"/> Winter and<br>Summer term <input checked="" type="checkbox"/> Summer term <input type="checkbox"/> | <b>225 h</b> | <b>1 Term</b> |

## Module coordination

|                             |   |
|-----------------------------|---|
| <b>Teaching person</b>      | See <a href="https://basis.uni-bonn.de">https://basis.uni-bonn.de</a> |
| <b>Module coordinator</b>   | Prof. Dr. Hendrik Hakenes   |
| <b>Institute/Department</b> | Department of Economics   |

## Further Information

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|--|--|
| <b>(Reading lists, information links etc.)</b> | The recommended literature will be announced at the beginning of the course. |
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