



UNIVERSITAS GADJAH MADA

Faculty of Mathematics and Natural Sciences

Mathematics Department

Sekip Utara Bulaksumur Yogyakarta 55281 Telp: +62 274 552243 Fax: +62 274 555131 Email: math@ugm.ac.id Website: matematika.fmipa.ugm.ac.id

Doctoral Program in Mathematics

Telp : +62 274 552243

Email : maths3@ugm.ac.id;

Website : <http://math.fmipa.ugm.ac.id/dpmath>

MODULE HANDBOOK
Doctoral in Mathematics

| Module name: | Portfolio Management | | | | | | | | |
|---|--|-----------------------------|---------------------|------------|----|--------------------|----|--------------|----|
| Module level, if applicable: | Doctoral Program | | | | | | | | |
| Code, if applicable: | MSM 875 | | | | | | | | |
| Semester(s) in which the module is taught: | 1 | | | | | | | | |
| Person responsible for the module: | Chair of Statistics Research Group | | | | | | | | |
| Lecturer(s): | 1. Dr. Abdurakhman | | | | | | | | |
| Language: | Bahasa Indonesia | | | | | | | | |
| Relation to curriculum: | Doctoral Degree in Mathematics, Compulsory / Elective Course | | | | | | | | |
| Credit points: | 3 Semester Credit Unit | | | | | | | | |
| Type of teaching, contact hours: | 3x50 minutes lectures, 3x60 minutes structured activities. | | | | | | | | |
| Workload: | <ul style="list-style-type: none"> • 3x50 minutes lectures, • 3x60 minutes structured activities, • 3x60 minutes individual study, • In 16 weeks per semester (including assignments and examinations) | | | | | | | | |
| Recommended prerequisites: | - | | | | | | | | |
| Module objectives/intended learning outcomes: | <p>On successful completion of this course, students should be able to:</p> <p>CO 1: Students are able to apply portfolio weighting and option pricing formulas</p> <p>CO 2: Students are able to evaluate the latest approach in portfolio</p> <p>CO 3: Student are able to grab the idea how to develop the new model in the portfolio theory</p> | | | | | | | | |
| Content: | <p>Contents of this lecture consist of :</p> <ol style="list-style-type: none"> 1. Introduction to investment and types of return 2. General random variable for return of portfolio 3. Simple methods of portfolio : Mean-variance and CAPM 4. Trading portfolio and analysis of performance 5. Multiobjective portfolio 6. Monte carlo simulation for portfolio, 7. Resampling Efficient Frontier 8. Robust in Portfolio. 9. Latest topics in portfolio theory | | | | | | | | |
| Study and examination requirements and forms of examination: | <p>The final mark will be weighted as follows:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">No (components, activities)</th> <th style="text-align: right;">Weight (percentage)</th> </tr> </thead> <tbody> <tr> <td>1 Homework</td> <td style="text-align: right;">20</td> </tr> <tr> <td>2 Paper assignment</td> <td style="text-align: right;">50</td> </tr> <tr> <td>3 Discussion</td> <td style="text-align: right;">30</td> </tr> </tbody> </table> <p>Final grade will be determined as follows: Grade Criteria</p> | No (components, activities) | Weight (percentage) | 1 Homework | 20 | 2 Paper assignment | 50 | 3 Discussion | 30 |
| No (components, activities) | Weight (percentage) | | | | | | | | |
| 1 Homework | 20 | | | | | | | | |
| 2 Paper assignment | 50 | | | | | | | | |
| 3 Discussion | 30 | | | | | | | | |

| | | | | | | | | | | | | | | | | | |
|------------------------|---|---|-----------------------------|---|-----------------------------|-----|-----------------------------|---|-----------------------------|---|-----------------------------|---|---------------------|-----|-----------------------------|--|--|
| | <p>The initial cut-off points for grades A, B, C, and D should not be less than 80%, 65%, 50%, and 40%, respectively.</p> <p>Grade scale:</p> <table border="1"> <tr> <td>A</td> <td>$80 \leq \text{score}$</td> <td>C</td> <td>$40 \leq \text{score} < 50$</td> </tr> <tr> <td>A/B</td> <td>$70 \leq \text{score} < 80$</td> <td>D</td> <td>$20 \leq \text{score} < 40$</td> </tr> <tr> <td>B</td> <td>$60 \leq \text{score} < 70$</td> <td>E</td> <td>$\text{score} < 20$</td> </tr> <tr> <td>B/C</td> <td>$50 \leq \text{score} < 60$</td> <td></td> <td></td> </tr> </table> | A | $80 \leq \text{score}$ | C | $40 \leq \text{score} < 50$ | A/B | $70 \leq \text{score} < 80$ | D | $20 \leq \text{score} < 40$ | B | $60 \leq \text{score} < 70$ | E | $\text{score} < 20$ | B/C | $50 \leq \text{score} < 60$ | | |
| A | $80 \leq \text{score}$ | C | $40 \leq \text{score} < 50$ | | | | | | | | | | | | | | |
| A/B | $70 \leq \text{score} < 80$ | D | $20 \leq \text{score} < 40$ | | | | | | | | | | | | | | |
| B | $60 \leq \text{score} < 70$ | E | $\text{score} < 20$ | | | | | | | | | | | | | | |
| B/C | $50 \leq \text{score} < 60$ | | | | | | | | | | | | | | | | |
| Media employed: | Slides, White Boards | | | | | | | | | | | | | | | | |
| Reading List: | <ol style="list-style-type: none"> 1. Andrew T Adam, Investment Mathematics, John Wiley and Sons, 2003 2. David G. Luenberger, Investment Science, Oxford University Press, 1998 3. An Introduction to Financial option Valuation, Mathematics, Stochastics and Computation, Second Edition, Cambridge University Press 2004. | | | | | | | | | | | | | | | | |

Mapping of The COs and PLOs

| | PLO - 1 S3 Mat | PLO - 2 S3 Mat | PLO - 3 S3 Mat | PLO - 4 S3 Mat | PLO - 5 S3 Mat | PLO - 6 S3 Mat |
|------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| CO 1 | | | x | | | |
| CO 2 | | x | | | | |
| CO 3 | | | | x | | |

Programme Learning Outcomes (PLO) Doctoral Programme in Mathematics

| | | |
|--------------|----------|--|
| PLO-1 | : | <p>Attitude:</p> <p>Devote to God Almighty, uphold the humanity values, internalize academic values and ethics, responsible in working in the area of expertise independently.</p> |
| PLO-2 | : | <p>Knowledge:</p> <p>Mastering philosophy of mathematics and one of the fields in mathematics (algebra, analysis, applied mathematics, statistics, computational mathematics, computational statistics).</p> |
| PLO-3 | : | <p>Knowledge:</p> <p>Able to think logically, analytically, inductively, deductively, and structured; having the ability to manage, lead, and develop research programs independently, and able to communicate the thoughts as well as his work to the scientific community and the general public.</p> |
| PLO-4 | : | <p>Skill:</p> <p>Creating new concepts and / or new methods (original) in the field of mathematics that are recognized nationally and internationally.</p> |
| PLO-5 | : | <p>Skill:</p> <p>Able to apply mathematics according to their field of expertise to solve problems including those that require a multidisciplinary, cross-disciplinary, or trans-disciplinary approach.</p> |
| PLO-6 | : | <p>Life Long Learning:</p> <p>Having lifelong learning skills and adaptive to the development of science and technology, especially in fields related to Mathematics and its applications.</p> |