| Obuda University<br>John von Neumann Faculty of Informatics | Software Engineering Institute |
|---|---|
| **Name and code:**<br>*NIVRM1EBNE    Research Methodology in Computer Science* | **Credits***: 3*<br>*2021/22 year II. semester* |

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|---|---|---|---|---|
| Subject lecturers: Peter Juma Ochieng | | | | |
| Prerequisites (with code): | Comprehensive exam (NIXSS1EBNE) | | | |
| Weekly hours: | Lecture: 3 | Seminar.:0 | Lab. hours: 0 | Consultation:0 |
| Way of assessment: | mid-term mark | | | |

**Course description:**

*Goal*: Introduction to research methodology for computer scientists, including the literature review and analysis, research proposal, data collection and processing, evaluating, and finally the publishing and presentation of results.

*Course description:* The course topics cover the fundamentals of research, data collection, analysis and evaluation; and in the second part of the semester the techniques of publishing, academic writing and presenting are introduced.

| Lecture schedule | |
|---|---|
| *Education week* | *Topic* |
| 1. | Definition of research, differences between research and development<br>Research Formulation, Conferences and Journals<br>Research Paper |
| 2. | Literature review<br>Biblographic databases<br>Science metrics |
| 3. | Experiments and Metrics<br>Data collection and analysis<br>Variables and sampling |
| 4. | Experiments in uncontrolled environment<br>Sampling bias |
| 5. | Data processing<br>Graphs. Data Aggregation.<br>Introduction to Visualization<br>Histogram. CDF Plots. |
| 6. | Interpretation and evaluation<br>Statistics: Correlation and Distributions |
| 7. | Academic writing: Audience and Purpose<br>Publication types, co-authorship.<br>Intellectual Property. |
| 8. | Writing: Making your Work More Scannable<br>Transitions and Feedback |
| 9. | Typesetting: a short introduction to LaTeX |
| 10. | Research Proposals. Fellowship Applications. |
| 11. | An Approach to Short Presentations.<br>Giving Technical Talks |
| 12. | Public Speaking<br>Conference and poster presentations |
| 13. | TPC meeting and Research Compliance |

## Midterm requirements

| Education week | Topic |
| --- | --- |
| 7th week | **homework #1** |
| 14th week | **homework #2** |
| | |

## Final grade calculation methods

| Achieved result | Grade |
| --- | --- |
| 89%-100% | excellent (5) |
| 76%-88<% | good (4) |
| 63%-75<% | average (3) |
| 51%-62<% | satisfactory (2) |
| 0%-50<% | failed (1) |

## Type of exam

The two homeworks are evaluated and the grade is calculated from the average of the two.

## Type of replacement

The missing homework(s) can be submitted for the midterm grade replacement exam.

## References

Mandatory:
Lecture notes, available in the Moodle system

Recommended:
Kothari, C. R. (2004). *Research methodology: Methods and techniques*. New Age International.
Booth, W. C., Colomb, G. G. & Williams, J. M. (2003). *The craft of research*. University of Chicago press.
Doumont, J. L., Grossenbacher, L., Matta, C., & Cham, J. (2014*). English communication for scientists*.

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