The list of subjects of the electronic course "The Art of Doing Science"

Fall 2021 by professor George Kaptay, University of Miskolc, Hungary

Timing1[1]: Tuesdays from 1:30 pm to 3:30 pm Hungarian time (= from 6:30 pm to 8:30 pm Jakarta time) on the following dates: 28 September, 5 October, 19 October, 26 October, 9 November, 16 November, 23 November. Please, click:
https://meet.jit.si/Classes-by-George-Kaptay

Timing 2: Thursdays from 5 pm till 7 pm Hungarian time, on the following dates: 30 September, 21 October, 28 October, 11 November, 18 November, 25 November, 2 December. Place: in Kaldor room of the University of Miskolc (ground floor, Department of Physical Metallurgy etc., last room to the right).

Chapter 1. Producing new knowledge

1. Select supervisor and research field.
2. Search literature for a specific subject, identify a knowledge gap and set your research goal.
3. Make a hypothesis and a research plan to prove / disprove / improve your hypothesis.
4. Perform and document your research / survey and make primary conclusions.
5. Discuss and model your results (apply the rules of Déscartes).
6. Formulate your claim according to 4 criteria (should be specific, novel, proven and better).
7. Paradigms and paradigm shifts: the evolution of science and the revolutions in science.

Chapter 2. Dissemination of new knowledge

8. Types of knowledge dissemination and the list of publication (public and private).
9. Publishing houses and their journals, the major players in the publishing game.
10. Measuring the excellence of a journal by impact factor or by SJR / Q-s of Scimago.
11. Types of journal papers and selection of the best journal(s) for your paper.
12. Parts of a scientific paper and the optimal way of writing it.
13. You as an author: submission and tracking of your paper until it is published.
14. You as a reviewer: reviewing papers.
15. Chapters of an ideal PhD Thesis / Dissertation, and the ideal way of writing it.
16. Writing a PhD booklet.
17. Preparing for your pre-defence and for your defence.

[1] Subject to reginal time-shift; if that happens, a note will be circulated.

Chapter 3. Measurement of scientific excellence

18. Why measuring scientific excellence of individuals despite that it is “impossible”?
19. Measuring the scientific performance of individuals: what can be measured and what is worth to measure?
20. The definition, praise and criticism of the h-index.
21. The definition, praise and criticism of the “composite score” (“the best 100,000 scientists of the world”).
22. Improving the h-index for improved estimation of scientific excellence of individuals.
23. Planning your scientific carrier: how many papers to publish per year and where?
24. Ranking the universities (QS, THE): definition, praise and criticism of.
25. How to motivate individuals within institutions / countries to improve their performance?

Chapter 4. How to remain honest and become rich at the same time?

26. Ethical rules to conduct research and write publications
27. The patenting game: a social deal. What to patent and what not to patent? Inventors vs owners and the deal between them. What are the chapters of a perfect patent?
28. TRL = Technology Readiness level: the art of communication to get cash to develop your ideas into a product.