Universidade Estadual de Campinas
Faculdade de Engenharia Química
Coordenação de Pós-Graduação

Disciplina: IQ182-Tópicos em Engenharia Química I

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Estrutura: Aulas e exercícios

Avaliação: Seminários e trabalhos

Programa:

COURSE PLAN

Developing Scientific Survival Skills for Young Scientists:

Focus on internationalisation (SSI)

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Context and Outline

In this 45 hours online & interactive workshop, we propose a graduate workshop designed and developed to give basic advice and offer mentorship to advanced graduates, post-docs and young scientists willing to enter the Global International Market of their discipline. The central theme of this course is that succeeding in Sciences (clinics, applied or natural) requires skills (often referred to as 'soft (or *flexible*) professional skills') beyond those needed for Sciences (often referred as 'hard (or *rigid*) professional skills'. The lecture aims at giving basic guidance for personal deepening and completed by further mentorship in a perspective of becoming an independent thinker and an autonomous scientist/worker, able to create and implement an international vision that goes beyond the personal and national boundaries.

The main topics of the sessions will be [1]:

- What are and how to integrate soft skills into professional life, what, when, how?
- The job market, and how benefit from it at local, national, and international levels?
- Seeking/applying to scholarships and funding, and how to afford international experiences in a global market
- Communication skills, including impacts and publications, planning, running and publishing quality papers
- Building your CVs, your works, planning your future CVs, and managing yourself
- The fundamental laws of 'scientific survival' (know yourself, plan ahead, and play chess)
- Ethics in science: From referencing to plagiarism, through ethical experimenting
- Alternative careers to science, but still high science content

Attention will be also focused on introducing the audience to the writing of quality papers, including [2]:

- Why do we need to publish and disseminate scientific results?
- When should we start writing a paper?
- Planning, visioning and imagining… it all starts from here.
- Experimenting, discussing and criticizing.
- Writing: alone or in a team effort? One shot or iteratively? English directly or translating?
- Reviewing manuscripts and papers, including our own.
- Criticism and constructive criticism.
- Reading before writing…

- Targeting the audience, and writing for them.
- Investigations can expand information and become knowledge when it will be analyzed interactively between heterogeneous groups, with diverse ideas, and be translational research.

In addition, the International Comparisons & Performance Indicators will introduce students to the world of international indicators. No indicator is an objective measurement of all of the dimensions of the academic performance of a university. Because of this, universities must formulate their own institutional visions, their specific contributions to local, national and global society, always taking their institutional history, value and characteristics into account. The information contained in international comparisons can form part of a frame of reference to help evaluate the progress of universities towards their established objectives, among which is the gaining of high international reputation. To do this it is necessary to expand the resources available for research, promote research in international collaboration, promote alliances and coalitions that lead to cooperation with researchers in other countries. This topic will bring critical views of how the use of indicators and participation in rankings, reflects academic performance. Asspects that will be explored are:

- International Comparisons, Rankings, trends in University classifications.
- Biometrics, professional-centred indicators (H-Index for example), Superprolific authors
- The publication-centred metrics and other ways of measuring impact of a research or University activity.

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Structure of the course

This is an online course, planned and structured so to satisfy the exigencies of a 45 hours course at Unicamp, Campinas, Brazil, in chemical engineering school in collaboration with ULaval Graduate School in Materials and Metallurgy, including Biomaterials. An e-Course provides full flexibility to students to read documents, be challenged by new literature, search online pertinent information, with discipline. Procrastination is the main enemy of e-Courses. Students are required to keep the level, advance the work progressively, but at their own rhythm. Students are invited to block every other day some time 60 to 120 minutes to work on the proposed documents, and finalise the discussion work that need to be remitted at the latest every two weeks.

This course plan will constitute the main documents for all academic activities, personal works, evaluations, and interactive spaces. Students are requested to read deeply and attentively this plan and access the online documents (a link to a Google Classroom will be sent to each one individually).

This e-course is divided into 5 Blocks. Each Block includes an online folder. Students can find in this block a Masterfile (“read me first”) that indicates them what they should read and listen. For each block, some references are also indicate and students are requested to deepen their knowledge and consolidate their critical thinking by reading few papers on pertinent topics. The goal of each block is to allow the student to prepare a few pages discussion work on the proposed block topic, as indicate below in this course plan.

The Masterfile, which is the file that students must read first, contain a number of useful information, including:

- A list of documents to read and study, intended to support the growth and the knowledge acquisition from the students; some documents are presented in pdf format (available on the dropbox) while others directly by links;
- A list of videos selected for the students, to support in a coherent manner their growth and their critical thinking development;
- A list of documents to deepen their knowledge, synthesis and discussion abilities, or integrative capacity.

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Referências:

[1] Rosei, Johnston, “Survival Skills for Scientists”, Imperial College Press (2006).

[2] Whitesides. Whitesides’ Group: Writing a Paper. Adv. Mater. 16, 1375 (2004).

[3] Hobin et al. Journal of Translational Medicine 2012, 10:72 http://www.translational-medicine.com/content/10/1/72

[4] Trochim, W., Kane, C., Graham, M. J., & Pincus, H. A. (2011). Evaluating translational research: A process marker model. Clinical and Translational Science, 4(3), 153–162.

A number of pertinent references of reviewed works in the field, as well as TED or MOOC capsules online, as well as suitable links to actualities are provided to students.

Students are invited to deepen their knowledge by searching online work and references confirm to their individual expectations.