SYLLABUS

RESEARCH IN PUBLIC HEALTH

Doctoral study for full time and part time students of Public Health

The aim of doctoral study is to gain competences in science and research to real-life field of scientific disciplines 7.4.2. Public health.

Skills gained in the course

After passing the course doctoral student will acquire basic skills in the field of general and targeted scientific knowledge. At the same time he/she will learn the research methodology, critical reading, and aid for scientific study.

Structure of the course

1. Basics of the methodology of scientific investigation.
2. Public health from the perspective of science and research.
3. Critical reading and evaluation of scientific evidence.
4. Search and retrieval in bibliographic databases ISI, PUBMED, SCOPUS, Slovak Medical Library (purchase remote access), National information system supporting research and development in home country, Library TU Central register of publication activities.
5. Working with literary references, the citation norms of Harvard and others. Use systems ENDNOTE or Mendeley.
6. Essay writing.

Notes to individual items

Ad 1. Basics of the methodology of scientific investigation.

a) Read Popper, K. R. & Miller, D. A.: *Pocket Popper* (Fontana, 1983), or the full text of the book of Karl Popper: *Logic of scientific research*.
b) Study the legislative standards: *Law on organization of state support for research and development and amendment of Act no. 575/200*1 Coll. the organization of government activities and the organization of central state administration as amended. 172.
c) EU 2006. *The European Charter for Researchers*, Code of Conduct for the Recruitment of Researchers. Luxembourg: Office for Official Publications of the European Communities European Communities. EUROPEAN COMMISSION & 2013. *Ethics for researchers. Facilitating Research Excellence in FP7*. In: EC Directorate-General for Research and Innovation, SISCF (ed.). EU, Brussels.
d) Get acquainted with relevant legislation from your home country.
e) OECD 2002. *The Measurement of Scientific and Technological Activities. Frascati Manual 2002*. Proposed Standard Practice for Surveys on Research and Experimental Development. Brussels: OECD Publishing.

Ad 2. Public Health viewed as Research and Development

a) Read the book: TULCHINSKI, T. & VARAVIKOVA, E. 2008. *The New Public Health*. 2nd Edition, Academic Press.

Ad 3. Critical Reading and Assessment of Scientific Evidence

a) Read a book on critical reading, suggested: YUDKIN, B. 2006. *Critical Reading: Making Sense of Research Papers in Life Sciences and Medicine*, Taylor & Francis;

b) Read the brochure development guidelines produced by Niki (at http://www.quality.healthnet.sk/EBM/Guidelines_development_handbook_Slovak_version_v1.pdf);
c) Find in a library Cochrane evidence for the problems addressed by the PhD student and rank them in order of strength of evidence;
d) Become familiar with NICE (National Institute of Clinical Excellence) and become familiar with the guidelines which directly or marginally related to the PhD student's research topic.

Ad 4. Bibliographic databases

a) Acquiant with the history of MEDLINE (Blanken, RR & PIERRE J. VINKENB, PJ 2001. *Medical Databases: Excerpta Medica versus Medline*. In: FREDRIKSSON, EH (ed.) A Century of Science Publishing: A Collection of Essays. IOS Press) and ISI (CAWKELL, T. & Garfield, E. 2001. *The Institute for Scientific Information*. In: FREDRIKSSON, EH (ed.) A Century of Science Publishing: A Collection of Essays. IOS Press. http: //www.garfield.library .upenn.edu / papers / isichapter15centuryofscipub149-160y2001.pdf) or with a book FREDRIKSSON, EH 2001. *A Century of Science Publishing: A Collection of Essays*, IOS Press (download the http://ebooks.iospress.nl/book / a-century-of-science-publishing).
b) Conduct a comprehensive search for solving the issue of the PhD work from the World of Knowledge, MEDLINE and home libraries. Prepare a list of the MESH keywords.

Ad 5. Working with citations

a) Gain experience with personal bibliographic software. I recommend starting with the use of personal professional library (of course I have nothing against using it for other purposes). I recommend EndNote produced by Thomson Reuters, http://endnote.com/. It is a commercially available database, the vendor also provides student discounts. It is a world famous and most other software libraries support it. For those who are supporters of open source are a multitude of applications. For example Mendeley is free, easy to use. (http://www.mendeley.com/) Whatever the PhD student decides, the aim is to create a database of publications that apply in own work.

Ad 5. Essay writing

Use structured approach as it is outlined in many sites, as for instance this:
Title (Centered or left-aligned)
I. Introduction
    A. Premise/Thesis
    B. Statement of points
II. Body
    A. Point 1
        1. Supporting Information
        2. Supporting Information
    B. Point 2
            1. Supporting Information
            Supporting Information
III. Conclusion/Summary
        A. Summary of supporting information
        B. Conclusion reached (Restatement of premise)
IV. Citations

Use these instructions from the Harvard University.

Essay Structure

Writing an academic essay means fashioning a coherent set of ideas into an argument. Because essays are essentially linear—they offer one idea at a time—they must present their ideas in the order that makes most sense to a reader. Successfully structuring an essay means attending to a reader's logic.

The focus of such an essay predicts its structure. It dictates the information readers need to know and the order in which they need to receive it. Thus your essay's structure is necessarily unique to the main claim you're making. Although there are guidelines for constructing certain classic essay types (e.g., comparative analysis), there are no set formulas.

Answering Questions: The Parts of an Essay

A typical essay contains many different kinds of information, often located in specialized parts or sections. Even short essays perform several different operations: introducing the argument, analyzing data, raising counter-arguments, concluding. Introductions and conclusions have fixed places, but other parts don't. Counter-argument, for example, may appear within a paragraph, as a free-standing section, as part of the beginning, or before the ending. Background material (historical context or biographical information, a summary of relevant theory or criticism, the definition of a key term) often appears at the beginning of the essay, between the introduction and the first analytical section, but might also appear near the beginning of the specific section to which it's relevant.

It's helpful to think of the different essay sections as answering a series of questions your reader might ask when encountering your thesis. (Readers should have questions. If they don't, your thesis is most likely simply an observation of fact, not an arguable claim.)

"What?" The first question to anticipate from a reader is "what": What evidence shows that the phenomenon described by your thesis is true? To answer the question you must examine your evidence, thus demonstrating the truth of your claim. This "what" or "demonstration" section comes early in the essay, often directly after the introduction. Since you're essentially reporting what you've observed, this is the part you might have most to say about when you first start writing. But be forewarned: it shouldn't take up much more than a third (often much less) of your finished essay. If it does, the essay will lack balance and may read as mere summary or description.

"How?" A reader will also want to know whether the claims of the thesis are true in all cases. The corresponding question is "how": How does the thesis stand up to the challenge of a counter-argument? How does the introduction of new material—a new way of looking at the evidence, another set of sources—affect the claims you're making? Typically, an essay will include at least one "how" section. (Call it "complication" since you're responding to a reader's complicating questions.) This section usually comes after the "what," but keep in mind that an essay may complicate its argument several times depending on its length, and that counter-argument alone may appear just about anywhere in an essay.

"Why?" Your reader will also want to know what's at stake in your claim: Why does your interpretation of a phenomenon matter to anyone beside you? This question addresses the larger implications of your thesis. It allows your readers to understand your essay within a larger context. In answering "why", your essay explains its own significance. Although you might gesture at this question in your introduction, the fullest answer to it properly belongs at your essay's end. If you leave it out, your readers will experience your essay as unfinished—or, worse, as pointless or insular.

Mapping an Essay

Structuring your essay according to a reader's logic means examining your thesis and anticipating what a reader needs to know, and in what sequence, in order to grasp and be convinced by your argument as it unfolds. The easiest way to do this is to map the essay's ideas via a written narrative. Such an account will give you a preliminary record of your ideas, and will allow you to remind yourself at every turn of the reader's needs in understanding your idea.

Essay maps ask you to predict where your reader will expect background information, counter-argument, close analysis of a primary source, or a turn to secondary source material. Essay maps are not concerned with paragraphs so much as with sections of an essay. They anticipate the major argumentative moves you expect your essay to make. Try making your map like this:

State your thesis in a sentence or two, then write another sentence saying why it's important to make that claim. Indicate, in other words, what a reader might learn by exploring the claim with you. Here you're anticipating your answer to the "why" question that you'll eventually flesh out in your conclusion.

* Begin your next sentence like this: "To be convinced by my claim, the first thing a reader needs to know is . . ." Then say why that's the first thing a reader needs to know, and name one or two items of evidence you think will make the case. This will start you off on answering the "what" question. (Alternately, you may find that the first thing your reader needs to know is some background information.)

* Begin each of the following sentences like this: "The next thing my reader needs to know is . . ." Once again, say why, and name some evidence. Continue until you've mapped out your essay. Your map should naturally take you through some preliminary answers to the basic questions of what, how, and why. It is not a contract, though—the order in which the ideas appear is not a rigid one. Essay maps are flexible; they evolve with your ideas.

Signs of Trouble

A common structural flaw in college essays is the "walk-through" (also labeled "summary" or "description"). Walk-through essays follow the structure of their sources rather than establishing their own. Such essays generally have a descriptive thesis rather than an argumentative one. Be wary of paragraph openers that lead off with "time" words ("first," "next," "after," "then") or "listing" words ("also," "another," "in addition"). Although they don't always signal trouble, these paragraph openers often indicate that an essay's thesis and structure need work: they suggest that the essay simply reproduces the chronology of the source text (in the case of time words: first this happens, then that, and afterwards another thing . . .) or simply lists example after example ("In addition, the use of color indicates another way that the painting differentiates between good and evil").

Documents required for the exam:

a) Critical analysis of one article – in writing (item 3)
b) The list of collected evidence and their assessment (item 3)
c) Search and MESH (Item 4)
d) List of references from research at Harvard format using either Endnote or Mendeley (under point 5)
e) An essay on the use of scientific methods of investigation and legal norms in a PhD student issues studied.

Assembled by prof. Martin Rusnak, MD, PhD