

# ME2003-2004 Course PM

## 1. Introduction

This course aims to provide in-depth knowledge of research methods and common research approaches in general and in Industrial Engineering and Management in particular. It also provides students with relevant tools to plan and carry out their future master theses.

In order to facilitate the learning activities in a structured way, the course is divided into five modules. Each module has its own structure and literature. Following a flipped classroom approach (to some extent), students are introduced to the learning material before class. In this regard, some significant parts of the learning process consist of activities outside of the classroom.

**Module 1** gives an *introduction* to science, theory and methods as well as research ethics

**Module 2** focuses on *literature review* and *research questions*

**Module 3** focuses on *qualitative* methods.

**Module 4** focuses on *quantitative* methods.

**Module 5** focuses on *critical review* of others' works and *research proposal development*.

Each module is given as a combination of several learning activities, e.g., readings, assignments, lectures, seminars, reviews and proposal development.

The course is taken by three programs:

- Master's Programme, Industrial Management (TINEM)
- Master's Programme, Technology-based Entrepreneurship (TTBEM)
- Degree Programme in Industrial Engineering and Management (CINEK)

For TINEM and TTBEM, the course code is ME2003. For CINEK, the course code is ME2004.

## 2. Teachers, disposition and communications

The course involves an examiner, a teaching team as well as a number of invited guests and lecturers:

- **Examiner / course coordinator:** Emrah Karakaya [EK]
- **Teaching team:** Nils Wikland [NW], Beatriz Pérez Horno [BH], Jonas House (JH), Arvid Svenson (AS) and Olov Engwall (OE)
- **Guests and other lecturers**

- **In person**
  - Bo Karlsson (Director of Studies, INDEK, KTH) [BK]
  - Liza Wensink (Deloitte, an alumnus of CINEK) [LW]
  - Åsa-Karin Engstrand (Assoc. Prof., KTH) [ÅE]
  - Niklas Arvidsson (Prof., KTH) [NA]
  - Kristina Nyström (Prof. KTH) [KN]
  - Mats Engwall (Prof., KTH) [ME]
- **Pre-recorded**
  - Daniel Kamangar (Handelsbanken, an alumnus of CINEK)
  - Frauke Urban (Prof., KTH)
  - Christofer Laurell (Assoc. Prof., KTH)
  - Ed Saedi (Assist. Prof., BI Norwegian Business School)
  - Johann Packendorff (Prof., KTH)

The course has the following preliminary disposition of the lectures and seminars. Please follow the online schedule for details.

Week	Mon	Tue	Wed	Thurs	Fri
35	<p><b>Lecture</b></p> <p>Introduction to the course (only for ME2003)</p> <p>[EK and the teaching team]</p>		<p><b>Lecture</b></p> <p>Introduction to the course (only for ME2004)</p> <p>[EK and the teaching team]</p>	<p><b>Lecture – Module 1</b></p> <p>Writing a master thesis [LW] &amp;</p> <p>Theory, Method, Context</p> <p>[EK]</p>	<p><b>Digital Lecture – Module 1</b></p> <p>Research Traditions CS vs. IM [OE]</p> <p><b>Lecture – Module 1</b></p> <p>Master thesis and research methods [BK] &amp; Research Traditions and Research Ethics [EK]</p>
36			<p><b>Two Lectures – Module 2</b></p> <p>Literature Review &amp; Research</p>		

			Questions Problematization vs. gap-filling [EK, BH]		
37	<b>Seminar Day – Module 2</b> Literature Review and Research Questions [BH/AS]	<b>Seminar Day – Module 2</b> Literature Review and Research Questions [BH/AS]	<b>Seminar Day – Module 2</b> Literature Review and Research Questions [BH/AS]		
38	<b>Lecture – Module 3</b> Qualitative Methods [JH]		<b>Lecture – Module 3</b> Qualitative Methods [ÅE]	<b>Seminar Day – Module 3</b> Qualitative Methods [AS/JH]	<b>Seminar Day – Module 3</b> Qualitative Methods [AS/JH]
39	<b>Seminar Day – Module 3</b> Qualitative Methods [AS/JH]				<b>Two Lectures – Module 4</b> Quantitative Methods [NA, KN]
40		<b>Seminar Day – Module 4</b> Quantitative Methods [NW]	<b>Seminar Day – Module 4</b> Quantitative Methods [NW]	<b>Seminar Day – Module 4</b> Quantitative Methods [NW]	
41		<b>Optional Event - INDEK Master thesis info</b>	<b>Digital Lecture – Module 5</b> Critical Review of Others Work [EK] [EK]	<b>Lecture – Module 5</b> & Master thesis & Research Proposal [ME]	<b>Digital Lecture – Module 5</b> Research Proposal & The way forward [EK]

42					
43					
44		<b>Seminar Day– Module 5</b> Research Proposal [JH/NW]	<b>Seminar Day– Module 5</b> Research Proposal [JH/NW]	<b>Seminar Day– Module 5</b> Research Proposal [JH/NW]	

Students are encouraged to attend all lectures in order to facilitate the learning process (although lectures are not compulsory). If you do not attend the lectures, you may have difficulties to complete and pass the assignments.

Students need to attend four compulsory seminars in total (a seminar in each seminar set and four in total). Each seminar set has its own structure. All require preparation. See specific information for each module on Canvas.

- **Seminars – Modules 2, 3 and 4:** Students work in teams of 3-4 students
- **Seminars – Modules 5:** Students work individually or in pairs

Each student needs to be assigned to one of the seminar groups for Modules 2, 3, 4 and 5 (follow the instructions [here](#) for how to self-assign yourself for a seminar).

- If a student misses one of the seminars (e.g., because of sickness etc.), the student needs to come to the extra seminar scheduled on the 14th of November at 15:15-17:00. In this extra seminar, the student will conduct the activities that were missed in the corresponding seminar (e.g., reflection on module readings and discussion on the module submissions).

The communication is managed through CANVAS. If you have any questions and comments that can be of interest to other students (e.g., in regard to assignments, deadlines or activities), post them in the "Questions & Answers (Q&A) forums" on CANVAS. If you have a personal question (e.g., sickness-related etc.), you can write an email to Emrah (emrahka@kth.se).

A reference group will be formed, composed of the examiner, seminar leaders and 5-6 students. The purpose of the reference group is to discuss ongoing activities in the course and exchange feedback. The reference group is expected to meet three times preliminarily scheduled on

- the 3th of September at 12:00 -13:15 (lunch provided)
- the 4th of October at 16:00 - 17:00 on Zoom
- the 11th of November at 16:00 - 17:00 on Zoom

If you are interested in participating in the course reference group, send an email to Emrah (emrahka@kth.se).

### 3. Assignments, examination and grading

The examination is composed of four main elements (spread over five modules) as follows.

Type (code)	Credits	Scale	Individual or collaborative	Content
Assignment (INL1)	1.0	P, F	Individual	Module 1
Seminar assignment (SEM1)	3.0	P, F	Group work of 3-4 students	Module 2, Module 3 & Module 4
Assignment (INL2)	1.0	P, F	Individual	Module 5
Project (PRO1)	2.5	P, F	Individual or in pairs	

The alignment among the intended learning outcomes (ILOs), modules and examination follows.

ILO	Examination Elements
Explain and reflect on scientific knowledge, different research traditions and research ethics.	Module 1
	- Quiz (assignment) - Reflection (assignment)
Critically review scientific literature and formulate relevant research questions.	Module 2
	- Draft report - Final report
Apply both qualitative and quantitative research methods.	Module 3
	- Draft report
	- Final report
	Module 4
- Draft report	
- Final report	

<p>Critically review and assess a scientific text according to its aim, methodological rigor, contributions, relevance to practice as well as sustainability aspects.</p> <p>Formulate a plan for a scientific study including well motivated method choices and assessment of ethical issues and sustainability aspects.</p>	<p><i>Module 5</i></p> <ul style="list-style-type: none"> <li>- <i>Critical review of published work</i></li> <li>- <i>Draft report</i></li> <li>- <i>Critical review of peers' draft work</i></li> <li>- <i>Final report</i></li> </ul>
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The details (including the deadlines) of the assignments, seminar works and research proposals are posted on CANVAS. An overview of the agenda can be seen in the following Gantt chart.

Week	Mon	Tue	Wed	Thurs	Fri
35	<b>Lecture - Intro</b>		<b>Lecture - Intro</b>	<b>Lecture – Module 1</b>	<b>Digital Lecture – Module 1</b> <b>Lecture – Module 1</b>
36		<i>Module 1 Quiz &amp; Reflection</i>	<b>Two Lectures – Module 2</b>		
37	<i>Module 2 Draft report (just before your assigned seminar)</i> <b>Seminar Day – Module 2</b>	<b>Seminar Day – Module 2</b>	<b>Seminar Day – Module 2</b>		<i>Module 2 Final report</i>
38	<b>Lecture – Module 3</b>		<b>Lecture – Module 3</b>	<i>Module 3 Draft report (just before your assigned seminar)</i> <b>Seminar Day – Module 3</b>	<b>Seminar Day – Module 3</b>

39	<b>Seminar Day – Module 3</b>		<i>Module 3 Final report</i>		<b>Two Lectures – Module 4</b>
40		<i>Module 4 Draft report (just before your assigned seminar)</i>	<b>Seminar Day – Module 4</b>	<b>Seminar Day – Module 4</b>	
41	<i>Module 4 Final report</i>		<b>Digital Lecture – Module 5</b>	<b>Lecture – Module 5</b>	<b>Digital Lecture – Module 5</b>
42					<i>Module 5 Critical review of published work</i>
43					
44	<i>Module 5 Draft Report (Single deadline for all)</i>	<i>Module 5 Presentation (Just before your assigned seminar)</i>	<b>Seminar Day – Module 5</b>	<b>Seminar Day – Module 5</b>	<i>Module 5 Critical review of peers' work</i>
		<i>Module 5 Final Report</i>			

For Module 2, Module 3, Module 4, and Module 5 students are required to fulfill:

- Draft submission (any time before the corresponding seminar starts)

- Active participation in the corresponding seminar (e.g., reflections on readings, cross-team presentations & feedback on others' works)
- Final submission (by given deadlines)

For the draft submission, students are expected to conduct preparatory reading of the course literature and to perform the given assignment to the best level possible. The final submission is a development of the draft submission to reach the grading criteria with help from feedback during the seminars. From experience of previous course rounds, students that prepare more for the draft submission are more likely to experience a richer learning process.

In the seminars, students are required to actively participate by presenting their reflections on the readings of the course literature, having cross-team presentations and providing feedback. In essence, the learning process is expected to start before the corresponding lecture, be reinforced during the seminar activities and continue thereafter. Specific structure of each seminar can vary and seminar details are posted in the corresponding module page on Canvas.

In the assignments, students are required to use either APA or Harvard referencing system consistently. Some basic information about referencing can be found here: <https://www.kth.se/en/biblioteket/skriva-referera/skriv-referenser-1.856564>

### **3.1. Feedback on assignments and revisions**

If students do not pass an examination element, students are required to revise and resubmit their corresponding assignment/project within two weeks after they are graded as failed. When this happens, a resubmission will be assessed within two weeks after the resubmission deadline, i.e. four weeks after initially being graded with a fail.

Due to the tight schedule in the course, students are not likely to receive their grades in one module before starting the next. Grading is done within three weeks after deadline (except re-submissions). For instance, grades in module 2 may not be expected before the course has reached module 5. It is therefore important that you listen actively and work with feedback from the examiner, seminar leaders, and peers to be able pass the examination elements and avoid resubmissions piling up at the end of the course.

If students fail a resubmitted assignment/project, the final grade will be a fail. In such cases, students can consider taking a re-exam (the format and content of which may vary) on

- 16 December at 14:00-16:00
- 17 December at 14:00-16:00
- 14 January at 14:00 -16:00
- 15 January 14:00 -16:00

### **3.2. Plagiarism**

In this course, plagiarism is not accepted. All the submissions will be checked for plagiarism. More information on plagiarism (along with a handbook) can be found at:

<https://www.kth.se/en/student/stod/studier/fusk-1.997287>



## 4. Course literature

The course literature is categorized according to the modules. They are found through [KTH Primo](#). There is a lot of optional reading, which is primarily added to help you navigate the methodological literature when writing your master thesis. The optional reading can help you deepen your understanding already in this course. However, we believe that the mandatory course literature is sufficient for you to reach a basic level of understanding.

See the following links for the course literature:

- [Module 1 - Course Literature](#)
- [Module 2 - Course literature](#)
- [Module 3 - Course literature](#)
- [Module 4 - Course literature](#)
- [Module 5 - Course literature](#)

## 5. Examination adapted to students with special needs

For students with disabilities who have a statement from KTH's FUNKA unit on recommended support during examination, the following applies in this course:

- All support under code R (i.e. adjustments relating to space, time and physical circumstances) are granted without special decision by the examiner
- Support under code P (educational adaptation) must be actively granted or rejected by the examiner after contact has been made by the student in accordance with KTH's rules. Normally, support actions under code P will also be approved.

# Module 1 - Course Literature

## Course Literature

### Basics

- Saunders, M., Lewis, P., & Thornhill, A. (2015). Chapter 4. Understanding research philosophy and approaches to theory development. In *Research methods for business students* (Seventh ed.). New York: Pearson (access [here](#) or [here](#))[Links to an external site.](#)

### Differences between natural and social sciences

- Moon, K., & Blackman, D. (2014). [A guide to understanding social science research for natural scientists](#)[Links to an external site.](#). *Conservation Biology*, 28(5), 1167-1177.
- Gitch (2002). Comparing the Epistemologies of Scientific Disciplines in Two Distinct Domains: Modern Physics versus Social Sciences: [Part 1](#)[Links to an external site.](#) and [Part 2](#)[Links to an external site.](#). *Systems Research and Behavioral Science*

### Issues related to theory development

- Cows, Josh, and Ralph Schroeder. "[Causation, correlation, and big data in social science research](#)[Links to an external site.](#)." *Policy & Internet* 7.4 (2015): 447-472.
- Berthon, Pierre, et al. "[Potential research space in MIS: A framework for envisioning and evaluating research replication, extension, and generation](#)[Links to an external site.](#)." *Information Systems Research* 4 (2002): 416-427.

### Ethics in management field

- Bell, Emma, and Alan Bryman. "[The ethics of management research: an exploratory content analysis](#)[Links to an external site.](#)." *British journal of management* 18.1 (2007): 63-77.

### Optional suggested further readings (which you can for instance revisit during your master thesis)

- Winch, Peter. *The idea of a social science and its relation to philosophy*. Routledge, 2008
- Creswell, John W. "Research Design: Qualitative, Quantitative, and Mixed Methods Approaches." (2002).
- SAGE Research Methods: Available at: [http://methods.sagepub.com/Links to an external site.](http://methods.sagepub.com/Links to an external site)
- Collis, Jill, and Roger Hussey. *Business research: A practical guide for undergraduate and postgraduate students*. Macmillan International Higher Education, 2013.

- Lindgren, M., & Packendorff, J. (2009). Social constructionism and entrepreneurship: Basic assumptions and consequences for theory and research. *International Journal of Entrepreneurial Behavior & Research*, 15(1), 25-47.
- The European Code of Conduct for Research Integrity (2017). Available at: [https://ec.europa.eu/research/participants/data/ref/h2020/other/hi/h2020-ethics\\_code-of-conduct\\_en.pdf](https://ec.europa.eu/research/participants/data/ref/h2020/other/hi/h2020-ethics_code-of-conduct_en.pdf)
- The guide "Good Research Practice", published by the Swedish Research Council (Vetenskapsrådet). Download at: [http://www.vr.se/download/18.3a36c20d133af0c1295800030/1321519981391/Good+Research+Practice+3.2011\\_webb.pdf](http://www.vr.se/download/18.3a36c20d133af0c1295800030/1321519981391/Good+Research+Practice+3.2011_webb.pdf)
- Lennerfors, Thomas Taro (2019). *Ethics in Engineering*. Studentlitteratur. ISBN:9789144127682
- Morgan, G., & Smircich, L. (1980). [The Case for Qualitative Research](#)[Links to an external site.](#). *The Academy of Management Review*, 5(4), 491-500.
- Makadok, Richard, Richard Burton, and Jay Barney. "[A Practical guide for making theory contributions in strategic management](#)[Links to an external site.](#)." *Strategic Management Journal*(2018).

## Module 2 - Course literature

### Course Literature

- Tranfield, David, David Denyer, and Palminder Smart. "[Towards a methodology for developing evidence-informed management knowledge by means of systematic review](#)[Links to an external site.](#)." *British journal of management* 14.3 (2003): 207-222.
- Snyder, H. (2019). [Literature review as a research methodology: An overview and guidelines](#)[Links to an external site.](#). *Journal of business research*, 104, 333-339.
- Durach, C. F., Kembro, J., & Wieland, A. (2017). [A new paradigm for systematic literature reviews in supply chain management](#)[Links to an external site.](#). *Journal of Supply Chain Management*, 53(4), 67-85.
- Alvesson, Mats, and Jörgen Sandberg. "[Generating research questions through problematization](#)[Links to an external site.](#)." *Academy of management review* (2011): 247-271.

### Optional suggested further readings

In particular for students aiming for a MSc thesis project in Computer Science

- Write a Research Question <https://csedresearch.org/write-a-research-question/>[Links to an external site.](#)

### General

- Sandberg, Jörgen, and Mats Alvesson. "[Ways of constructing research questions: gap-spotting or problematization](#)[Links to an external site.](#)?" *Organization* 18.1 (2011): 23-44.

- Borrego, M., Foster, M. J., & Froyd, J. E. (2014). [Systematic literature reviews in engineering education and other developing interdisciplinary fields](#). *Journal of Engineering Education*, 103(1), 45-76.
- Tay, Andy. [How to write a superb literature review](#). *Nature* (2020).

# Module 3 - Course literature

## Course Literature

### Qualitative research in general

- Morgan, G., & Smircich, L. (1980). [The Case for Qualitative Research](#). *The Academy of Management Review*, 5(4), 491-500.
- Gehman, J., Glaser, V. L., Eisenhardt, K. M., Gioia, D., Langley, A., & Corley, K. G. (2018). Finding theory–method fit: A comparison of three qualitative approaches to theory building. *Journal of Management Inquiry*, 27(3), 284-300. Available via KTHB/SAGE [here](#).
- Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The qualitative report*, 13(4), 544-559. Available via TQR [here](#).

### Analyzing qualitative data in specific

- Saunders et al (2015/2012) Chapter 13 (Analysing qualitative data) in the book 'Research methods for business students'. 6th or 7th edition. Pearson. Available EBSCOhost [here](#) or [here](#).
- Chapter 18, 20 and 25 of the book: Flick, Uwe, ed. (2014) *The SAGE handbook of qualitative data analysis*. Sage. Available via KTHB/SAGE [here](#).
  - Kozinets, R. et al. (2014) Chapter 18. *Netnographic Analysis: Understanding Culture through Social Media Data*. *The SAGE Handbook of Qualitative Data Analysis*.
  - Roulston K. (2014) Chapter 20. *Analysing Interviews*. *The SAGE Handbook of Qualitative Data Analysis*.
  - Coffey A. (2018) Chapter 25. *Analysing Documents*, *The SAGE Handbook of Qualitative Data Analysis*.

### Optional suggested further readings

- Aguinis, H., & Solarino, A. M. (2019). Transparency and replicability in qualitative research: The case of interviews with elite informants. *Strategic Management Journal*. Available via Wiley [here](#).
- Cassell, C., Cunliffe, A. L., & Grandy, G. (2018). *The Sage handbook of qualitative business and management research methods: History and Traditions*. London: SAGE Publications Ltd doi: 10.4135/9781526430212. Available via KTHB/SAGE [here](#).

- Yin, R.K., 2003. *Case Study Research: Design and methods*. Thousand Oaks: Sage Publications, London New Delhi.
- Flyvbjerg, Bent. "Five misunderstandings about case-study research." *Qualitative inquiry* 2 (2006): 219-245.
- Gioia, Corley, & Hamilton. 2013. "Seeking Qualitative Rigor in Inductive Research: Notes on the Gioia Methodology". *Organizational Research Methods*, 16(1):15-31.
- Suddaby, R., 2006, "What Grounded Theory is Not", *Academy of Management Journal*, 49(4), 633-642.
- Van Maanen, John (1979). *The fact of fiction in organizational ethnography*. *Administrative Science Quarterly*, 24, 539-550.
- Czarniawska, Barbara. *Narratives in social science research*. Sage, 2004.
- Fetterman, David M., ed. *Ethnography: Step-by-step*. Vol. 17. Sage, 2010.
- Ellet, William. *The case study handbook: How to read, discuss, and write persuasively about cases*. Harvard Business Press, 2007.
- Eisenhardt, Kathleen M. 1989, "Building theories from case study research." *Academy of management review* 14(4): 532-550.
- Eisenhardt, Kathleen M., and Melissa E. Graebner. "Theory building from cases: Opportunities and challenges." *Academy of management journal*1 (2007): 25-32.
- Siggelkow, N, 2007, "Persuasion with case studies", *Academy of Management Journal*, 50(1): 20–24.
- Alvesson, M., & Sköldbberg, K. (2017). *Reflexive methodology: New vistas for qualitative research*. Sage.
- Rowley, J. (2012), "Conducting research interviews", *Management Research Review*, Vol. 35 Np. 3/4, pp. 260-271.
- Upton, D., Macadam, S. (1997), "Why (and how) to take a plant tour", *Harvard Business Review*, May-June, 97-106.
- Lobe B. et al. (2020) *Qualitative Data Collection in an Era of Social Distancing*, *International Journal of Qualitative Methods*, 19, 1-8.

## Module 4 - Course literature

- Saunders, M., Lewis, P., & Thornhill, A. ([2015](#) or [2012](#)). Chapter 12. Analysing quantitative data. In *Research methods for business students* (Seventh ed.). New York: Pearson.[Links to an external site.](#)
- [Gelman, A. \(2017\). Ethics and statistics: Honesty and transparency are not enough. \*Chance\*, 30\(1\), 37-39](#)[Links to an external site.](#)
- [Gelman, A. \(2012\). Ethics and statistics: Statistics for cigarette sellers. \*Chance\*, 25\(3\), 43-46](#)[Links to an external site.](#)
- [Wasserstein, Ronald L., Allen L. Schirm, and Nicole A. Lazar. "Moving to a world beyond "p < 0.05"." \*The American Statistician\* 73.sup1 \(2019\): 1-19](#)[Links to an external site.](#)

### Optional suggested further readings

- [Echambadi, R., Campbell, B., & Agarwal, R. \(2006\). Encouraging best practice in quantitative management research: An incomplete list of opportunities. \*Journal of Management Studies\*, Vol. 43 \(8\), pp. 1801-1820](#)[Links to an external site.](#)

- [Amrhein, V., Greenland, S., & Mcshane, B. \(2019\). Scientists rise up against statistical significance. \*Nature\*, Vol. 567 \(7748\), pp. 305-307. Links to an external site.](#)
- [Saunders, M., Lewis, P., & Thornhill, A. \(2015\). Chapter 11. Collecting primary data using questionnaires. In \*Research methods for business students \(Seventh ed.\)\*. New York: Pearson. Links to an external site.](#)
- [Ioannidis, J. \(2019\). Why Most Published Research Findings Are False. \*CHANCE\*, Vol. 32 \(1\), pp. 4-13. Links to an external site.](#)
- [Goodman, S., & Greenland, S. \(2007\). Why Most Published Research Findings Are False: Problems in the Analysis \(Correspondence\). \*PLoS Medicine\*, Vol. 4 \(4\), E168. Links to an external site.](#)
- [Shah, R., & Goldstein, S. \(2006\). Use of structural equation modeling in operations management research: Looking back and forward. \*Journal of Operations Management\*, Vol. 24 \(2\), pp. 148-169. Links to an external site.](#)
- [Bamberger, P. A. \(2019\). On the Replicability of Abductive Research in Management and Organizations: Internal Replication and Its Alternatives. \*Academy of Management Discoveries\*, 5\(2\), 103-108. Links to an external site.](#)
- Pallant, J. (2010). *A step by step guide to data analysis using SPSS*. Berkshire UK: McGraw-Hill Education.

## Note

We would like to make a clarification concerning the basic assumptions for multiple linear regression as introduced in Saunders et al. (2015, 2012):

- Assumption 1 – the relationship between dependent and independent variable is linear
- Assumption 2 – the variance around the regression line is the same for all values of the dependent variable(s), i.e. homoscedasticity
- Assumption 3 – absence of correlation between two or more independent variables, collinearity or multi-collinearity
- Assumption 4 – the data for the independent variables and dependent variable are normally distributed.

We have been in contact with Mark Saunders who has confirmed that the fourth assumption is incorrect and that this is changed in the seventh version of the book. The new text reads as follows:

The residuals are normally distributed (discussed earlier in this section and Section 12.4). The residuals are the 'errors' between the predicted values of the dependent variable and the observed value when using the resultant regression equation. The simplest diagnostic tools to use here are to either draw a histogram of the residual values and look for a normal distribution (Figure 12.7), and plot the residual (error) values against the predicted values on a scatter graph and look for a diagonal line running from bottom left to top right.

# Module 5 - Course literature

## Course Literature

### Research design and process

- Saunders, M., Lewis, P., & Thornhill, A. (2015). [Chapter 5. Formulating the research design](#). In *Research methods for business students* (Seventh ed.). New York: Pearson.
- Dubois, A., & Gadde, L. E. (2014). ["Systematic combining"—A decade laterLinks to an external site.](#) *Journal of Business Research*, 67(6), 1277-1284.

### Enhancing rigor in research

- Shah, Sonali K., and Kevin G. Corley. ["Building better theory by bridging the quantitative–qualitative divideLinks to an external site."](#) *Journal of management studies*8 (2006): 1821-1835.
- Schaefer, S. M., & Alvesson, M. (2020). [Epistemic attitudes and source critique in qualitative researchLinks to an external site.](#) *Journal of Management Inquiry*, 29(1), 33-45.
- Goffin, K., Åhlström, P., Bianchi, M., & Richtnér, A. (2019). [Perspective: State-of-the-art: The quality of case study research in innovation managementLinks to an external site.](#) *Journal of Product Innovation Management*, 36(5), 586-615.
- Maula, M., & Stam, W. (2020). [Enhancing Rigor in Quantitative Entrepreneurship ResearchLinks to an external site.](#) *Entrepreneurship: Theory and Practice*, 44(6), 1059–1090.

### Crafting a text

- Heath, M., and Caroline Tynan. ["Crafting a research proposalLinks to an external site."](#) *The Marketing Review* 10.2 (2010): 147-168. [alternative link via [ResearchGateLinks to an external site.](#)]
- Mensh, Brett, and Konrad Kording. ["Ten simple rules for structuring papersLinks to an external site."](#) *PLoS computational biology*9 (2017): e1005619. [alternative link via [KTHBLinks to an external site.](#)]

### Reflecting on sustainability

- M. Nilsson, E. Chisholm, D. Griggs, P. Howden-Chapman, D. McCollum, P. Messerli, B. Neumann, A.S. Stevance, M. Visbeck, M. St afford-Smith

[Mapping interactions between the sustainable development goals: lessons learned and ways forwardLinks to an external site.](#)

*Sustain. Sci.*, 13 (6) (2018), pp. 1489-1503

- Susur, E., & Karakaya, E. (2021). [A reflexive perspective for sustainability assumptions in transition studiesLinks to an external site.](#) *Environmental Innovation and Societal Transitions*, 39, 34-54.

## Optional suggested further readings

In particular for students aiming for a MSc thesis project in Computer Science

- Amaral, J. About Computing Science Research Methodology. ([Local copy Download](#) [Local copy](#)). University of Alberta, Canada.

## Critical review of others work

- Mentzer, J. T. (2008). Rigor versus relevance: why would we choose only one?. *Journal of Supply Chain Management*, 44(2), 72-77.
- Baruch, Y., & Holtom, B. C. (2008). Survey response rate levels and trends in organizational research. *Human relations*, 61(8), 1139-1160.
- Schmenner, R. W., Van Wassenhove, L., Ketokivi, M., Heyl, J., & Lusch, R. F. (2009). Too much theory, not enough understanding. *Journal of Operations Management*, 27(5), 339-343.
- Guba, E. (1981) "Criteria for Assessing the Trustworthiness of Naturalistic Inquiries", *Educational Communication and Technology Journal*, 29(2): 75-91.
- Graebner, M., Martin, J., and Roundy, P., (2012), "Qualitative Data: Cooking without a recipe", *Strategic Organization*, 10(3): pp. 276-284.
- Tracy, S. (2010), "Qualitative Quality: Eight "Big-Tent" Criteria for Excellent Qualitative Research", *Qualitative Inquiry*, 16(10) 837-851.
- Bansal, P., Smith, W., and Vaara, E. (2018), "From the editors: New ways of seeing through qualitative research", *Academy of Management Journal* , 61(4): 1189–1195.
- Eisenhardt, K., Graebner, M., Sonenshein, S. (2016), "From the editors: Grand challenges and inductive methods: Rigor without Rigor mortis", *Academy of management Journal*, 59(4): 1113-1123.
- Bansal, P., and Corley, K., (2011), "From the editors: The coming of age for qualitative research. Embracing the diversity of qualitative methods", *Academy of Management Journal*, 54(2): 233-237.

## Research proposal development and writing

- Writing a research proposal, University of Southern California (2023). Available at <https://libguides.usc.edu/writingguide/assignments/researchproposalLinks to an external site.>
- Blomkvist, Pär, and Anette Hallin. *Method for engineering students: Degree projects using the 4-phase Model*. Studentlitteratur, 2015.
- Zina O'Leary (2017) *The Essential Guide to Doing Your Research Project*
- Federico Caniato, Des Doran, Rui Sousa, Harry Boer, (2018) "Designing and developing OM research – from concept to publication", *International Journal of Operations & Production Management*, Vol. 38 Issue: 9, pp.1836-1856.
- Pratt, M. (2009), "For the lack of a Boilerplate: Tips on writing up (and reviewing) qualitative Research", *Academy of Management Journal*, 52(5), 856-862.
- Langley, A., & Abdallah, C. (2011). [Templates and turns in qualitative studies of strategy and managementLinks to an external site.](#) In *Building methodological bridges* (pp. 201-235). Emerald Group Publishing Limited.