

## **Advanced Academic Writing**



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Welcome to the course in Advanced Academic Writing! My name is Tord, and I have a background in research, mostly the life sciences, but I have also done some computer programming. I picked up a thing or two over the years, from my supervisors and collegues, that I want to share with you. I now work as a grants manager where I help other people bring in grants. In total I have helped to bring in over 300 million crowns in grants for myself and others. Most of that to others. Why do you think I'm teaching? I've also done some manuscript reviewing for journals. I noticed that, as a grad student, you typically don't get to write very much. If you are lucky and productive, you have like, one manuscript to write every second year or so. And then typically your supervisor insists on writing the introduction, abstract, and discussion, and leaves you with writing the materials or results, right? So this course is aimed at boosting your practical skills in writing, in a realistic format.





## There is hope for the young!

How you write manuscripts and grant proposals impacts your success rate.



There is hope for the young! It is easy to get depressed sometimes as you apply for a grant and you realize that it probably will be awarded to a professor with 400 papers in their CV, right? But how you write your project description actually matters, beacause some granting agencies, for example the Swedish Reaearch Council, actually do read project descriptions. It does happen occationally that young scientists swim ahead in the competition and make the short list and get funded because of how they wrote their project description. Good, exciting preliminary data, good flow, a good presentation.



## **Five Assignments**

- 1) Write research article manuscript 1.
- 2) After feedback, write rebuttal and revised manuscript 1.
- 3) Write research article manuscript 2 (new story + journal).
- 4) After feedback, write rebuttal and revised manuscript 2.5) Write a grant proposal.

In this course you'll have five assignments. First, you'll write a research article manuscript. You will get feedback on it, and you should write a rebuttal letter and a revised manuscript. You will write a second manuscript, a new story for a new journal template, and after feedback, write another rebuttal letter and another revised manuscript. You will also write a grant proposal.



#### Useful resources

Copyright-free images: <u>Pixabay</u> <u>Unsplash</u> <u>Pexels</u>

Real scientific datasets: Academic Torrents

Free browser-based graph maker :

ChartGo

Free browser-based statistics calculator:

DanielSoper

Instructions for authors for some journals:

Nature

Science

Scientific Reports

Lab-on-a-Chip

Analytica Chimica Acta

Clinical Biomechanics

J Acoustic Soc Amer

J Proteome Res

Examples of rebuttal letters:

AJP JBC

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On the course homepage you will find useful resources that will help you with your tas'ks. This is an advanced course, so you are in charge of doing it, but here are some resources to help you. For example; instructions for authors. These are examples, you can pick other journals if you want. But you are expected to pick a template and follow it. You will also find examples of rebuttal letters and project descriptions.



## Articles

Use either your own unpublished data or fake data. Do not submit sensitive data! Do not copy-paste, you must write new texts! Submit as Word by e-mail. Ignore journal image rules, add as appendix.

Do not submit fake data to a real journal...

When you write your articles, you can use your own, unpublished data if you want, or you can use fake data, that is fine. You should not submit anything sensitive that you are about to patent. You are not allowed to copy-paste anything. You can ignore the image rules of the journals, they can be quite complex. Just add images as an appendix to your manuscript. And you should of course never submit fake data to a real journal.



#### Useful resources

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Real scientific datasets: Academic Torrents

Free browser-based graph maker :

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J Acoustic Soc Amer

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Again, please take a look at the resources page and use the information available there.



## Grant

# Write a grant proposal to VR (NT) (Swedish Research Council). Include only project description and budget. Include illustrations embedded in the text.

Submit (Word+Excel) by e-mail.

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You are also supposed to write a grant proposal to the Swedish Research Council, or pretend proposal. We will only bother about the project description and the budget. Please embed illustrations in the text, like you would for a real project description. Submit to me, not the the VR.

Week	Mon	Tues	Wed	Thu	Fri	Sat	Sun
10	Monday March 2 09:00-10:00	(writing)	(writing)	(writing)	(writing)		
	RoomE1517a						
	Introduction to the Manuscript Assignments and the Grant Assignment						
11	Deadline Manuscript 1 Monday March 9, 24:00	(writing)	(writing)	(writing)	(writing)		
12	Deadline Manuscript 1R Monday March 16, 24:00*	(writing)	(writing)	(writing)	(writing)		
13	Deadline Manuscript 2 Monday March 23, 24:00	(writing)	(writing)	(writing)	(writing)		
14	Deadline Manuscript 2R Monday March 30, 24:00*	(writing)	(writing)	(writing)	Deadline Grant Proposal** Friday April 3, 24:00		

\*May move forward some, see e-mail

NR \* SIGI

\*\*Feedback on grant next week

This is the current schedule. You have to check the webpage, in case this is an old lecture. Make sure you have the right, actual schedule. I plan to run this course twice per year, spring and fall. As you can see there is a lot of writing for you, and you must make sure you meet the deadlines. So be aware of the deadlines and don't miss them.



## **Pass/fail limits**

No final exam.

Submit all five assignments before each deadline.

Minimal quality = all sections filled out, no plagiarisms.

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There will be no final exam on this course. Instead, you are supposed to submit all five assignments before each deadline, with a minimum quality, so I need no blank sections, no plagiarisms. The point here is, I will attack all spelling and scientific errors I can find as hard as I can, and we'll have an interesting discussion. But none of that has anything to do with the pass/fail limits. I will not fail you because you made a spelling error. The whole point of the course is to jog your writing muscles. So, I want you to submit before the deadlines and I don't want to see any blank sections or blank submissions.



## **Diagnostic test**



Anonymous Vocabulary Quiz: 33-multiple choice quiz

Reading a lot improving vocabulary + improving writing skills. I put a diagnostic test on the homepage, the anonymous vocabulary quiz. I strongly encourage you to do that. It is completely anonymous, I can't even see your IP number or anything. It is not included in the pass/fail limits of the course. It turns out that reading a lot improves your vocabulary, and your grammar, and a lot of things like style, voice, in a passive way. So just by reading you can improve your writing skills. If you go to a creative writing class, to learn how to write novels, the first thing they say to you is 'make sure you read a lot'. So I also encourage you to read a lot. Outside of this course you should read at least one manuscript or scientific article per day, and you should read at least one English pocket book per weekend. This will improve your writing skills, and you won't even notice it. So, please do the diagnostic test.





## **Common writing errors**



The long sentence. Passive voice. Overstating your data. Unclear goals or reasons. Bad spelling/grammar. Atlantic English. Swenglish. Repeated use of favorite word. Skewed emphasis. Mixed tenses. Spoken expressions.

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I'll go through some common writing errors that I have encountered. I have previously made a lot of these myself. A lot of senior professors still do these things. It's imporant to recognize that not all of these are exactly hard, grammatical errors. It's more about that they make the text more difficult to read for the reviewer.





## **Common writing errors** The long sentence.

#### Before:

Quantitatively, the impedance of a two-terminal circuit element is the ratio of the complex representation of a sinusoidal voltage between its terminals to the complex representation of the current flowing through it, and in general, it depends upon the frequency of the sinusoidal voltage, and impedance also extends the concept of resistance to AC circuits, and possesses both magnitude and phase, unlike resistance, which has only magnitude.

#### The fix: Split up to three sentences.

Here is an example; the long sentence. I'll let you read this for a while.

So I know exactly why this happens most of the time. You are young. You want to show the world what you know. You have all these exciting data. So you put it in there, oh- and this, oh- and this. And when you're done you are happy, thinking, 'yeah, I got it all in there'. In your own mind it's good because you were able to cram in all the facts you wanted. But you have to think about the reader. This is very difficult to read. It is like a jungle of text. It's too long. So the fix is to split this up into three sentences.





## **Common writing errors** Passive voice.

#### Before:

Red blood cells, A9 dopaminergic neurons in the substantia nigra, macrophages, alveolar cells, lung cells, retinal pigment epithelium, hepatocytes, mesangial cells in the kidney, endometrial cells, cervical cells and vaginal epithelial cells are examples of cells that contain hemoglobin.

#### The fix:

Hemoglobin is present in many cell types, for example .....

Passive voice. This is when you have the action word at the end of the sentence. It's not necessarily incorrect, but it makes for a difficult sentence, just like the previous example. So you have to wait until the end until you can figure out what the sentence is all about. Always try to write in an active voice, so with action word at the front. Here: 'Hemoglobin is present in many cell types...'.





## **Common writing errors** Overstating your data.

#### Before:

As shown in Fig.1, our method can cure brain cancer.

### The fix:

The 35 % reduced growth of a brain cancer cell line (Fig. 1) holds promise for the future development of therapeutic approaches based on our method.

Overstating your data. You are supposed to be bombastic when you write a proposal, but you mustn't be too bombastic when you write a paper. You have to present the results as they are, or the reviewers will come down on you. So if you wrote ' As shown in Figure 1, our method can cure brain cancer', you should modify that to what it actually is, in this case a 35 % reduced growth of a brain cancer cell line.





## **Common writing errors** Unclear goals or reasons.

Keep it simple. What have you done? What do you want to do? Why? Unclear goals or reasone. You have to keep it simple. What is it that you want to do, and so on.





## **Common writing errors** Bad spelling/grammar.

Use a <u>spelchecking fucntion</u> every time you written have an new text.

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Spelling. I mean, there is no excuse, in a modern word processor you have a spell check function. Instead of thinking you are done and submit, you should always pause and do a spellcheck of the whole thing, and you will find a bunch of errors. Always do this.





## Common writing errors Atlantic

British
tumour
colour
favourite
centre
defence
haemoglobin
organise
ageing

American and British spelling, Yeah, so there is American English spelling, and there's British English spelling. Most Europeans don't care about this. They mix it. So they don't care if they read something that is mixed. But if some of the reviewers for your grant or paper happens to be American or British, and are sticklers for this, you're in trouble because they will immediately label your paper as written in bad English. And then they will problably try to justfy that by finding more errors. You have basically pissed them off. In addition, some journals specify exactly what type of English they want. So, always pay attention to that also. This is easy to learn, you just study it.





## **Common writing errors** Swenglish.

He looked as if it rained (= to be indifferent).

We fear there are owls in the moss (= to suspect malice).

Now there will be other cinnamon rolls (= time for punishment).

Swenglish. Yeah, so this happens when you translate an idiom in one language to another, and it usually does not work out well. If you say 'we fear there are owls in the moss' to a native English-speaking person, they will not understand what you are talking about. Swedes will, but not anyone else. Again, this goes for several different language groups, so you have to be aware of it.


### LUNDS Common writing errors Repeated use of favorite word.

These systems are poised to revolutionize medical diagnostics and treatment modalities. However, the lack of environmentally friendly actuator materials is still hindering this industry, preventing a host of new biomedical devices to enter the mainstream market. In this proposed EU project, *Novel medical diagnostic and treatment modalities*, we propose to solve this deadlock through implementation of a completely new modality of smart actuating materials which will be integrated in other modalities. This family of materials is based on highly effective modalities which have radically different properties compared to existing ones.

#### The fix:

These systems are poised to revolutionize medical diagnostics and treatment <u>modalitiesoptions</u>. However, the lack of environmentally friendly actuator materials is still hindering this industry, preventing a host of new biomedical devices to enter the mainstream market. In this proposed EU project, *Novel medical diagnostic and treatment modalities*, we propose to solve this deadlock through implementation of a completely new <u>modality class</u> of smart actuating materials which will be integrated in other <u>modalitiessystems</u>. This family of materials is based on highly effective modalities which have <u>has</u> radically different properties compared to existing ones. Repeated use of favorite word. Yeah, you can have a word that you sort of fall in love with and then you want to use it all over the place. But it becomes boring to read. So just change it to something similar that says the same thing, but a different word.





### **Common writing errors** Skewed emphasis. Before:

The patient material consisted of microvesicles from urine samples from 126 Danish prostate cancer patients and 53 healthy **men**, **isolated with** a novel acoustic technology.

#### The fix:

The patient material consisted of urine samples from 126 Danish prostate cancer patients and 53 healthy men, from whom microvesicles were isolated with a novel acoustic technology. Skewed emphasis. You can find lots of examples on this from grade school. People write books about these things. Very funny books. This is a real example [*reads top text on slide*]. So here it seems they isolated healthy men using acoustics. Which is not what they did, right? So they isolated microvesicles with acoustics. So, pay attention to this.





### **Common writing errors** Mixed tenses.

#### **Before:**

After 16 hours gelation of sol-gel droplets, each microarray chip was soaked with 30 µl of PBS solution and incubated for 1 hour with a blocking buffer (1% BSA in PBS buffer, 10mg/mL). This washing step is followed by washing in PBS with 0.05% Tween-20, and then FITC-labeled antibodies (from 1 pg/mL to 10 ng/mL) in PBS buffer were incubated for 1 hour (See Figure 2). After a washing step (soaked into Tween-PBS three times), the chips are positioned under microscopy for detection.

#### The fix:

After 16 hours gelation of sol-gel droplets, each microarray chip was soaked with 30 µl of PBS solution and incubated for 1 hour with a blocking buffer (1% BSA in PBS buffer, 10mg/mL). This washing step is was followed by washing in PBS with 0.05% Tween-20, and then FITC-labeled antibodies (from 1 pg/mL to 10 ng/mL) in PBS buffer were incubated for 1 hour (See Figure 2). After a washing step (soaked into Tween-PBS three times), the chips are were positioned under microscopy for detection. Mixed tenses. You shouldn't usually mix past and present tense in the same section. There may be different sections of the manuscript where you use different tenses. And again, look in the Instructions for Authors what they say.





### **Common writing errors** Spoken expressions.

Don't, won't can't, would've...

Do not, will not...

Spoken expressions, In formal English, you do not write the abbreviated forms, you always spell them out; do not, will not.



## Advanced/risky:

#### **The Reviewer Trap:**

Include an obvious logical hole in your story. The reviewer will ask for an extra experiment. ...that you of course already have prepared.

This can help shift focus from other weaknesses.

Yeah, so, you can if you if you want use the 'reviewer trap' which means you introduce a defect in your story. You prepare the experiment in advance and you lure the reviewer to jump on this, and bam, haha, you have already done the experiment. This may help shift focus from other weaknesses in your manuscript. But then again, it might trigger the halo effect and they start looking for more errors. So, it's a risky thing to do.



Current approval rates. Selling rhetoric. Follow the guidelines! Write clear and simple! You must show preliminar Don't hide your competito What's my indirect cost pe Examples of budgets. Grants and budgets. I want to talk about some important things when applying for grants.



Approval rates:

VR project(M/NT):	20-30 %
EU FP7(se):	27 %
EU H2020(se):	16 %
NIH R01 (us):	22 %
VINNOVA(2017):	36 %
SSF:	10 %

These are the current approval rates for some common agencies. As you can see, they range from ten to thirty percent or something. And that can be depressing, but this is the reality, this is what it looks like. So, you have to keep trying and trying and trying until you get it. But there is some hope here too, because these are just the overall figures calculated from all that have applied and those that were granted. But think about it; some of those applications sucked. So if you are really good, and write really well, your true approval rate is actually higher, if you know what I mean. So, again, it pays to make an effort and write a good application.



#### **Selling rhetoric:**

There is an important problem/fatal disease out there.



You can't just write a linear grants application, 'this is what has been done before, this is what we want to do now, and these are the references, good bye, thank you' –and expect to get funded. You have to be bombastic, you have to introduce some rhetoric. So, typically you describe the background where there's an important problem out there, costing millions of dollars a year, or there's a fatal disease out there that has no cure, killing millions of people a year.



#### **Selling rhetoric:**

We alone can fix it, beacuse we invented something new.



--and then, BAM, we can fix it, because we invented something new, right?



#### **Selling rhetoric:**

We also use several fancy methods currently in fashion (machine learning, Crispr/CAS gene editing etc).



..BAM, we also use several fancy methods like machine learning or gene editing. You have to have some of these if you want to write a good proposal.



#### **Selling rhetoric:**

Use the buzz words and approaches (e.g. multidisciplinary) mentioned in the call.



You should of course use the buzz words mentioned in the call, for example 'multidisciplinary'.



#### **Selling rhetoric:**

Emphasize your cool findings. Put them up front, and repeat.



Emphasize your cool findings. Yeah, sometimes I read grant applications from people who write it linear, and then on page three say 'by the way, life expectancy of the mice was extended three-fold'. Or 'by the way, we can cure childhood cancer', or something. That should go on the top! That should go in your abstract and title! In bold, right? You shouldn't hide your cool things. Put them in front, and repeat them.



#### **Selling rhetoric:**

To VR: I am the only one in Sweden representing this hot scientific field (or first/best in the world)



For the Swedish Research Council it is useful if you can hint that you are the only one in Sweden working in this hot field. If you are the only one working on the flame-throwing beetle and it turns out to be a hot field in the world they will look for people who work on that subject.



### **Selling rhetoric:**

Abstracts, summaries, and popular scientific descriptions are read most carefully.



Abstracts and summaries are read more carefully because they are easy to read and accessible. Don't make the mistake of saving this until the end. Don't wait until an hour before the deadline and go 'oh yeah I need a summary' – scribble, scribble scribble, submit. You should spend an extra amount of time with the abstracts and summaries. You should pay an extra amount of attention to these and write them really well. Re-write them several times until you are happy with them.



#### **Follow the guidelines!**

Do not exceed max page limit (typically cut intro). Do not use smaller font size. Use the CV template, not just any CV you have. Follow the guidelines! This should be a no-brainer, but a lot of people skip this for some reason, and that's bad. So, don't exceed the page limit. There's usually some fluff in the introduction you can cut. Don't use a smaller font size. It can be tempting, because then you can fit in so much more information. But you are also giving yourself an unfair advantage. The reviewers will see this and you will basically make them angry. So don't do that. Also make sure you use the exact CV template they propose, not just any CV you have laying around. They need to compare CVs, so it's important that they are in the same format. Else, you will basically piss the reviewers off, and you shouldn't do that.



# Write clear and simple!

A random person on the street should be able to understand.



Write clear and simple! A random person on the street should be able to understand. This may seem like some kind of a joke. You may feel the need to be all scientificky and technical about your stuff, and of course you should, but the core of it should be made presentable so that it can be understood by a lay person. Think about it; it's not very often that you get a reviewer on a committee that is in the exact same field as you are. If you are lucky, they are in an adjacent field, right? So there will be items in your application they don't understand. So, you have to be very clear and explain very well what you are doing.



#### Write clear and simple!

What do you want to do? Why is this important for the world? Avoid TLAs (three-letter acronyms).

So; what do you want to do? Why is this important? And please avoid TLAs (three-letter acronyms).



#### Write clear and simple!

The reviewers have limited time to initially browse your application, maybe 5- 20 minutes. Help the reviewers focus on the most important take-home message in a wall of text by **marking it in boldface**. However, take care not to **overdo** this, as it will **look** like you had **too much coffee** when **writing** the **application**. **application**.

The reviewers have limited time to read your proposal. Here you can help them by marking your take home messages in boldface. It makes it easier for them to read, and also easier for them to present the proposal to other members of the committee. So they won't have to highlight the text themself, you have highlighted it for them. Again, take care not to overdo this, as it will look ridiculous if you boldface every other word.


#### Write clear and simple!

Do you + team have the capacity? Is there enough time and money to do all of this? Are you asking for too much money? Do you and your team hold the capacity for this project? Is there enough time and money? Are you asking for too much money? You have to have this helicopter view of your application, is it feasible? Does the project description harmonize with the budget? Make sure you check the maximum limits that you can apply for etc.



# You must show preliminary data!

Demonstrates the feasibility of the project. Indicates that you have the capacity.



You must show preliminary data! It demonstrates that this can be done and that you are capable of doing it. You usually have at least something to use here.



#### Don't hide your competitors.

Reviwers will still find them. Show instead that they are weak.

Don't hide your competitors, they can be found by your reviewers. Instead, try to show that they are weak.



Find your current LU indirect cost Excel here:

https://www.ekonomiwebben.lu.se/for-mittarbete/projektansokan-ochprojektredovisning/mallar-for-projektkalkyler

Third page of the Excel, the 'forskning'column.

If you are working at Lund University, you have to mind the overhead costs. This is the link for finding out what the current overhead costs are for your department. These change every year, so you must be aware of them. For the Swedish Research Council, you will get funded regardless of how high your indirect costs are, but some other agencies have restrictions, which impacts your co-funding level.



#### Effort **x** number **x** yearly salary

LUNDS UNIVERSITET						Previous <b>x</b> 1,02				<b>x</b> 1,53 <b>x</b> 12	
A	А	В	С	D	E	F	G	Н	I	J	K.
1	SEK		number of	effort	2020	2021	2022	2023	SUMS	salary /mon	per year w. Taxes
2	Salaries	PhD studen	1	80%	462 672	471 925	481 364	490 991	1 906 953	31 500	578 340
3		Postdoc	1	50%	367 200	374 544	382 035	389 676	1 513 454	40 000	734 400
4					0	0	0	0	0		
5	Material	Chemicals			80 000	100 000	100 000	<mark>80 000</mark>	360 000		
6		9 2 2 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			0	0	0	0	0		
7									0		
8			Subtotal		909 872	946 469	963 399	960 667	3 780 407		
9			Lab space	15,91%	144 761	150 583	153 277	152 842	601 463		
10			Indirect costs	35,81%	325 825	338 931	344 993	344 015	1 353 764		
11			TOTAL		1 380 458	1 435 983	1 461 669	1 457 524	5 735 634		
12											
13					MAX: MSEK 1,5/	yr					
14					2 % salary increa	ase/yr					

I made a template in Excel for the budget on the homepage. You can use it if you want to, you don't have to. But this is what I typically do. The budget should typically be entered in a web form, I typically copy this to an Excel sheet. It is easier to work with, you can send it to your collaborators, and more easily change it than in the web form. Then, when you are done, you just put it in the web form from the Excel. So you need to know the salaries. On these you add taxes, Lund University adds 53 % in taxes to the salaries. In the righ column you can see the salary to use for each category. You multiply that with the number and effort in percent, and you get the salary cost per year per category. I usually like to add the salary increase of 2-4 % per year. The VR does not require this, but it is good to have it in there as you will have to pay for this anyway, as an employer. Also mind the maximum limits per year and total. As you can see, with 53 % total overhead, there is not a lot left to play with. You can control this by controlling which department you are working at, I guess.



### **General creative tips**

#### Let someone(s) read your text to get extra input.

and/or

Let the text rest for a week, then return to it.

When you sit and write a lot, you become sort of blind to the text after a while, and you can't spot the errors anymore, because it's very tiring to read the same text over and over again. So, please let someone else read your text, someone you trust, someone who is not a competitor. You will be surprised about how much stuff you get back, like you should change to order of the sections, you forgot to mention something or you have spelling errors or whatever. You should also let the text rest for a week and do something else. Two things will happen; your subconcious will work on it, you will wake up in the middle of the night and add stuff to your notepad that you forgot to add. Also, you will get some rest and the next time you read it you are not so bored with it and read it more thoroughly.





## Now go write something.



That's it, go write something. And you are not done once you pass this course, you should make a continous effort throughout your life to improve your writing. OK, thank you, good luck.