

presents

Science

How to get a distinction in Junior Cycle Science



by **Eva Cody.**

Eva got a distinction in her Junior Cycle Science paper.



The New Junior Cycle Science Course is much broader than the old Junior Cert Exam. It's probably one of the most interesting and useful Junior Cycle subjects, with a wide range of different topics, from learning about the solar system to sustainability to microorganisms, there's never a dull moment! There's a good few experiments on the course which means a lot of practical, hands-on work in the laboratory. The lack of structure to the paper can put some students off, but the paper is very doable. In this guide, I'm going to be sharing a few tips that I wish I had been told at the start of first year!

Contents

Layout.....	3
CBA 1 - Extended Experimental Investigation	4
CBA 2 - Science in Society Investigation	7
The Assessment Task.....	9
The Written Exam (90%).....	11



The Layout

The Science Junior Cycle Exam is marked out of 400 marks. The Assessment Task is worth 40 marks (10%) with 360 marks (90%) going for a Written Examination at the end of third year.

- ▶ There are 2 Classroom Based Assessments on the course (CBA1 & CBA2).
- ▶ The Junior Cycle is also marked differently to the old course. Similar to the Junior Cycle English Exam, letters (A, B, C etc) have been replaced by grade descriptors:

Grade Descriptor:	Percentage:
Distinction	≥ 90 to 100
Higher Merit	≥ 75 and < 90
Merit	≥ 55 and < 75
Achieved	≥ 40 and < 55
Partially Achieved	≥ 20 and < 40
Not Graded (NG)	≥ 0 and < 20

- ▶ CBA Results are released in your JCPA in a special ceremony, in January of Transition Year. They will be reported on using the grades; Exceptional, Above Expectations, In Line with Expectations, and Yet to Meet Expectations.



CBA 1 - Extended Experimental Investigation

CBA 1 is a Written Assessment submitted at the end of Second Year, which is nice, as you can get it out of the way before the workload picks up in third year! Even though the results of CBA 1 will not go towards your final grade, it's a chance to develop your practical skills as a scientist and achieving an "Exceptional" will get your Junior Cycle off to a great start. You can choose any topic to research and carry out an experiment on.

- ▶ **Follow your interest:** I cannot stress enough the importance of picking a topic that you have a genuine interest in, as you'll be spending a great deal of your time working on it! Maybe it's a chapter from first or second year that you particularly enjoyed, or an area of science that you've always had an interest in, whatever makes you excited to get started!
- ▶ **Keep it simple:** You don't need to invent a new antibiotic or discover a new element to get an "Exceptional" grade. I researched "*How does the number of layers around an object affect its temperature?*", because I really enjoyed the chapter on Heat Energy that we studied in first year.
- ▶ **Research:** Spending a few days researching your topic online or in books will mean that by the end of it you'll have a pretty good understanding of how your experiment might turn out. Then you can write a sensible hypothesis, just a sentence predicting the general outcome of your experiment will do fine.
- ▶ **Practice makes perfect:** My teacher got each of us to do a trial run where we tested out our experiment a few days before. When things went wrongs, we had time to tweak and perfect our method before the actual day. If time allows, you can carry out your experiment more than once. You can then find the average of your data which will make your results a lot more accurate!



- ▶ **Writing a Conclusion:** Now that you have a set of results, you can **analyse your data**. If your data is numerical, a graph or bar chart is a great visual representation of your results. Taking a step back, try and understand what the data means, in relation to the variables. For example, my graph was a line straight through the origin which told me that the two variables were directly proportional. Can your set of results support your hypothesis? If your hypothesis is wrong, it doesn't necessarily mean that you'll lose marks - in fact science is all about trial and error and learning new things!
- ▶ **Reflecting:** The final step is to reflect on your experiment as a whole; think about things that **went well and what could have gone better**. What advice would you give to a younger student completing the same experiment? Recognising your mistakes and suggesting improvements does not weaken your work, in fact it strengthens your project. It's a sign of a good scientist who has reflected truthfully on their work!
- ▶ **Presentation:** Your **attention to detail** will make your project stand out from others! It's the little things like an organised layout, clear diagrams, and good spelling that will make all the difference when it comes to your write-up. If your project has a clear structure (like a table of contents, intro and conclusion) it will make it ten times easier to read and look a lot more professional.
- ▶ **Time Management:** Make the most of your class time, and I had to set aside some time after school to work on it as well. Three weeks seems like ages, but you'll be surprised by how quickly the time seems to run away from you once you get started!
- ▶ **Organisation:** I found keeping all of my CBA work in one place saved me a lot of hassle when it came to write up the final project. You could start a new copybook for your CBA work like I did and keep all your sheets and findings in a special folder, separate from your other Science work.



- ▶ **Focus:** It's worth glancing over the Features of Quality (which is ultimately the marking scheme your teacher will use when grading your CBA work). I printed it out and used it as a checklist, crossing each task out from the list as you go along. If you can tick off each feature, then you are well on your way to an Exceptional!



CBA 2 - Science in Society Investigation (SSI)

CBA 2 is known as the S.S.I. and is a written assignment completed around Christmas time in third year. It gives you an opportunity to research an area of controversy in science that you would like to learn more about. It is a project that you will put your research skills and critical thinking to good use. Like for CBA1, there is a Features of Quality there to guide you so make good use of it!

- ▶ Try and find a research **topic** that you are **actually passionate** about, because it will make the entire project more fun (e.g. I chose to research the impact of hydropower on society because I love all things to do with physics, and my vegetarian friend picked the topic of veganism and climate change) .
- ▶ Within that, you'll need to come up with a **research question**; one that has more than one obvious answer. For example, if you chose to research space exploration, the question “What are the hazards of space travel?” wouldn't be suitable as it doesn't spark any kind of debate. You could rewrite it as “Do the hazards of space travel outweigh the benefits?”.
- ▶ **Bibliography:** It's really important to **record your sources** in one long word document noting the title of the document, the author and the date you last visited the website. Part of this project is learning how to evaluate how reliable the sources you used were. I recommend writing a paragraph on each source - think about the date the document was created (e.g. a scientific newspaper article written last year will be much more accurate than one from 10 years ago), the author and language used. Do this as you go along, and you'll thank yourself later!



- ▶ Along with internet research, try scanning newspapers, library books, watching documentaries or an interview with an expert in your topic! It's okay to copy quotes from professionals or famous people word for word in quotation marks "", but you should *never* copy and paste a sentence from online. Firstly, this is a form of plagiarism - stealing someone else's work is essentially breaking the law!
Secondly, it's much better to skim the whole document and only use the information that is actually relevant your research question. There's so much information out there that it takes a bit of time to sift through what's important and what's not!
- ▶ You can present your findings in any form that you'd like, but an **intro, the main body of your project** followed with **a conclusion and bibliography** should be the bare minimum. I wrote my project in an essay style, but I broke up long chunks of text into paragraphs and used subtitles to make it easier to read! To give your assignment a personal touch, I would include your reasons for picking your research question in your introduction along with your initial view on the issue. In the conclusion, my final outlook on the research question, ideally **using evidence** from your work to support your argument.
- ▶ It's important that your project is **discursive writing** - meaning that you explore both sides of the arguments without being biased. In other words, stay neutral! You can't just pick one side to research; you need to look the argument from both sides. This project channels many of the skills you have learned in English: discursive writing, debating, paragraphs and critical thinking, which should be second nature to you by Christmas of third year!
- ▶ **Commitment is key:** Over the course of the three weeks assigned, I used to spend 30-40 minutes each day after my homework for my CBA work (on top of class time). If you set aside some time each day to work on your project, you'll fly through it!



The Assessment Task

The Assessment Task is a Written Report on your CBA 2 that takes place in **February** of third year. You will spend about an hour and a half answering questions about your project work. It's a chance to show off what you have learned when completing your CBA 2.

- ▶ You'll be given the questions a day before the Assessment Task, along with **Stimulus Material** (document, article, graph or visual image that you respond to). The types of question that you will be asked can vary each year but usually they relate to **the different type of sources** that you came across.
- ▶ You are allowed bring in your CBA2 work and notes to the Assessment Task write up, I would roughly **plan how you would answer** each one the night before and jot down a few bullet points for each answer on a mind map. Remember, failing to prepare is preparing to fail!
- ▶ Make an effort **to refer to a mix of sources** to show all the different types you used in your research. For example, I referenced to a book I used in question one of my Assessment Task, for the second I wrote about a newspaper article that I used, in the next I talked about a documentary that I watched to switch things up.
- ▶ You only have a small box for each of your responses so **keep your answers short and sweet!** When you see a question on a certain topic, it's tempting to write down everything that you have ever learnt about said topic, but if you haven't answered the question asked, you won't be able to get any marks. Look at it from the examiner's point of view: they have hundreds of papers to correct and they just want the facts, so cut straight to the chase!
- ▶ Don't underestimate the importance of **good presentation!** Writing slightly smaller will also make the world of difference. It means that you can make the most of your allocated writing space, getting in as much information as possible



- ▶ Unfortunately, your examiner who corrects your assessment task will not actually see your CBA 2 work itself. This is why it's so important to showcase what you have learnt from your project in your answers. You've worked hard on your CBA 2, so make sure you do it justice in the Assessment Task!



The Written Exam (90%)

The Science Written Examination is worth 90% of your grade, with 360 marks going for a 2-hour long paper at the end of third year. This exam has no set structure or topics, which can throw some students off. Instead, it will take the form of various multi-part questions divided into two sections: Section A and Section B.

- ▶ Don't be discouraged by the unpredictability of the paper. After all, if you have a good knowledge each of the topics on the course, you will be able to answer any question that comes up!
- ▶ Because there are no set questions to the exam, I revised for the exam as a whole by going through my textbook covering one chapter at a time, rather than revising for specific questions. After all, if you have a good knowledge each of the topics on the course, you will be able to answer any question that comes up!
- ▶ There were **three main parts** to my revision for the science exam:
 1. Flashcards
 2. Blurting
 3. Practise Questions

Experiments

- ▶ A lot of students worry "Should I know all of the experiments for the exam?". Here's my take on it:
- ▶ By the end of third year, you will have carried out loads of investigations throughout first, second and third year in class. Hopefully you will have some record of each of these experiments written up in a notebook or copy. There are over 50 experiments in the Junior



Cycle Science Course, and it's *recommended* that you know the method and conclusion for each (and be able to draw a labelled diagram of the apparatus).

- ▶ I remember for my Science Exam, I made a ton of flashcards and mind maps, spending countless hours memorising these and drawing out diagrams again and again until I knew each one inside out. However, on the day of my Science exam we had to write about only one experiment - finding the boiling point of water. This was really frustrating as I had wasted so much time revising all of these tricky experiments and methods yet the experiment question that came up was so straightforward that I could have probably answered it with no revision at all by making it up on the spot!
- ▶ Don't make the same mistake I did! Although teachers may tell you that you "should" know every single experiment in each chapter off by heart, don't kill yourself trying to learn them. They are really not that important in the grand scheme of things - plus there's enough content on the course to be worrying about all of the experiments as well!
- ▶ Instead of rote learning every single one, maybe just glance over them the day before your exam or pick 10 important ones to remember. If you have time, you can go back and look over each as learning the experiments did help me in other aspects of the exam. It would be great if you knew all of them, as experiments will help you in all aspects of the exam, but personally I don't think that that's necessary to achieve a distinction.



Flashcards

- ▶ A lot of people ask me how I managed to memorise all the information for the Science exam, I respond with one word: Flashcards!
- ▶ There are so many different ways to make flashcards, like buying a pack from a stationery shop and doing it the old-fashioned way or using the ready-made [Studyclix Science Flashcards](#).
- ▶ Choose the format that you think will suit you best and stick to it! I wrote a set of flashcards after each class, summarising what we had just learned. I kept them organised in a special drawer in my room, in order of chapter. At the end of third year, I had all of my study notes in one place, and I could avoid the frantic frenzy of trying to write out three years' worth of study notes in the weeks leading up to my exam (like some of my friends did!).
- ▶ Make sure that you make your flashcards effectively! Try and **summarise the content** so that there is as few words as possible on each flashcard. I replaced words with pictures and symbols (e.g. instead of writing out the words for "Oxygen and Hydrogen make Water" I would write " $O + H = H_2O$ "). If you write out your entire book onto your flashcards, there's not much point making flashcards in the first place!
- ▶ **Get creative!** The goal is to make your flashcards as visually appealing and engaging as possible. Use different coloured pens and highlighters, because the human brain responds better to colour than it does to black and white. You can even use pictures instead of words if you are a visual learner like me!
- ▶ You can make your flashcards more exciting by writing out flashcards where you need to "fill in the blanks", label diagrams (e.g. of the human heart), recite formulas, memorise chemical equations or even just simply a question on the front and the answer on the back.



- ▶ When it comes to revising a certain topic, you can simply pull out a pack of flashcards and get going! Plus, you can take your revision with you wherever you go - in the car, on the bus, to school or the library.
- ▶ When you have learnt one topic, make sure to come back to it again to test yourself (e.g. doing a quick recap a day or two later) so that the information really sticks (and stays in your long-term memory). Revisiting the content, the next day, after a week and a month later helped me remember what I had learnt in the exam hall, instead of getting a "blank".
- ▶ **Mnemonics** are another handy way of memorising important words or phrases, such as antonyms (e.g. for the planets "My Very Educated Mother Just Served Us Noodles") and you can make up your own. For example, when I was learning the features of living things in Biology, I wrote MRS GREN on one side of a flashcard and on the other what each letter stood for: Movement, Respiration, Sensitivity, Growth, Reproduction, Excretion, Nutrition.
- ▶ It's worth taking a pack of flashcards with you on the car journey to the exam to look over. There's something about calmly reading through information I already learned that really used to settle my nerves, reminding me that I knew more than I thought I did!



Blurting

- ▶ If flashcards aren't for you, or you have left your revision too late to make flashcards, then blurting is the way to go.
- ▶ This is a **revision technique that is based** on the idea of **active recall** (a.k.a. actually using your brain) which is possibly the most effective way of revising.
- ▶ To revise a topic by "blurting", first pick a chapter to revise and **write down the name of it in the middle of piece** of scrap paper. Jot down a couple of **subheadings** around it (e.g. if I was revising the chapter of the Circulatory System, I would write "Circulatory System" in the centre of the page and some subheadings like "Functions of Blood", "Components of Blood" and "Types of Blood Vessels" around the page. Then close your book, and set a timer (of ten minutes, for example) and **write down all you can remember about that topic** under each of the headings - diagrams, experiments, anything!
- ▶ Once the time is up, go back to your book and check your answers. It's a good idea to **correct yourself** where you went wrong and add in the points you missed with a different colour pen. If you need to, go back and go through your flashcards to jog your memory. Repeat this technique again and again until you feel confident enough to move on.
- ▶ This is a great way to see what you actually know. It helps avoid the trap of passive revision (i.e. revising ineffectively by reading the textbook, highlighting key words, writing out your study notes again and again). It's also a good way to recap a chapter that you have previously revised to check your progress.



Practise Questions

- ▶ Unfortunately, when it comes to science, rote learning a ton of flashcards simply isn't enough on its own to secure top marks. As well as learning the information, it's so **important to learn how to apply your knowledge.**
- ▶ Practise questions can be taken from past examinations, sample papers, questions at the end of the chapter in your book or even past class tests. The important thing is that you close your book and test yourself.
- ▶ You don't even need to buy past papers in store, as [Studyclix have them all online](#), organised by subject, year and topic, along with the corresponding marking schemes.
- ▶ It's really important to **correct your answers!** This means that you can track your progress and see what questions or topics you need to work on. It's well worth taking the time to write a couple of bullet points under the heading "What I Have Learnt" with the corrections that you made.
- ▶ In the weeks leading up to your exam, try and get through as many past papers as you can **under exam conditions.** Put your study notes away, set a 2-hour timer on your watch and when you are done, mark the paper out of 360 marks. By the time your exam rolls around in June, sitting down in the exam hall, doing the exam shouldn't faze you at all - in fact, it should feel just like doing another practise paper!



Helpful Hints

- ▶ **Timing:** The Science Written Examination is **2 hours long**, so you have plenty of time to complete the paper. I would recommend spending 2 or 3 mins skimming through paper at the beginning, to give you an idea of what questions are coming up. Then work through the questions as quickly and as carefully as you can, and ideally you should have left 10-15 minutes left over to check over your answers. Remember that slow and steady wins the race!
- ▶ **Be Prepared:** Make sure you get organised the night before your Science Exam - pack your exam pencil case with pens, pencils, a ruler, calculator and some colouring pencils. Formulae and Tables booklets will be handed out at the beginning of the exam. It's worth noting that since your paper will be scanned on a computer, you must write in blue or black ink. Diagrams, however, will be accepted in pencil.
- ▶ **Order: Answer** all of the straightforward **questions first that you know the answer to** (tick the box questions, labelling diagrams etc), and leave the **trickier ones for later** on. If you dwell too long on one very tricky question, it might mean that you neglect the others! After completing all the simpler questions, go back to the beginning and finish the ones you missed.
- ▶ The only way you will get 0 marks for a question is if you leave it blank, so **attempt every question**, even if you haven't a clue what the answer is, and you'll be awarded marks for giving it a go.
- ▶ **Use your Additional Time Wisely:** You only have one shot at your Science Exam so you may as well get the most out of those 120 minutes! Read over your questions and answers carefully. Make sure that you haven't missed any parts and have answered each question to the best of your ability. It's also worth double checking that you haven't made any silly



mistakes or spelling errors to maximise your marks. You have more than enough time to complete the paper so don't let any of it go to waste!

- ▶ **Answer the Question Asked:** Make sure that your **answers are concise**, and always answer the question asked in the first sentence of your answer. It's worth bringing in a marker **to circle or underline the key words in each question** such "Show", "Define" and "Justify". Even if you feel like this doesn't help you, underlining these words will show the examiner as it shows that you have focused on the question asked.
- ▶ **Answer Length:** The recommended writing space is only a guide for how much you should write so do not fret if you have small handwriting! Likewise, if you have larger writing don't be afraid to make use of the additional space at the end of each section. In my Science Examination, I spent my remaining time further developing my answers and had to ask for extra paper, which the supervisor was more than happy to hand out. It's very unlikely that you will be marked down for writing "too much", so long as you keep your answer relevant to the question, so **don't be afraid show off what you know!**
- ▶ **"It's a marathon, not a sprint":** Working hard throughout third year will make your life so much easier when it comes around to revision time. For example, study for your end of chapter tests and make your study notes as you go along. Put in the effort and you'll smash your Science exam!

The Science Course may seem intimidating at first but broken down into smaller topics and chapters the preparation can seem so much more manageable. With some hard work and exam technique you will smash the exam!





Finally, I would like to wish you the best of luck in the exam! You will be fine. 😊

