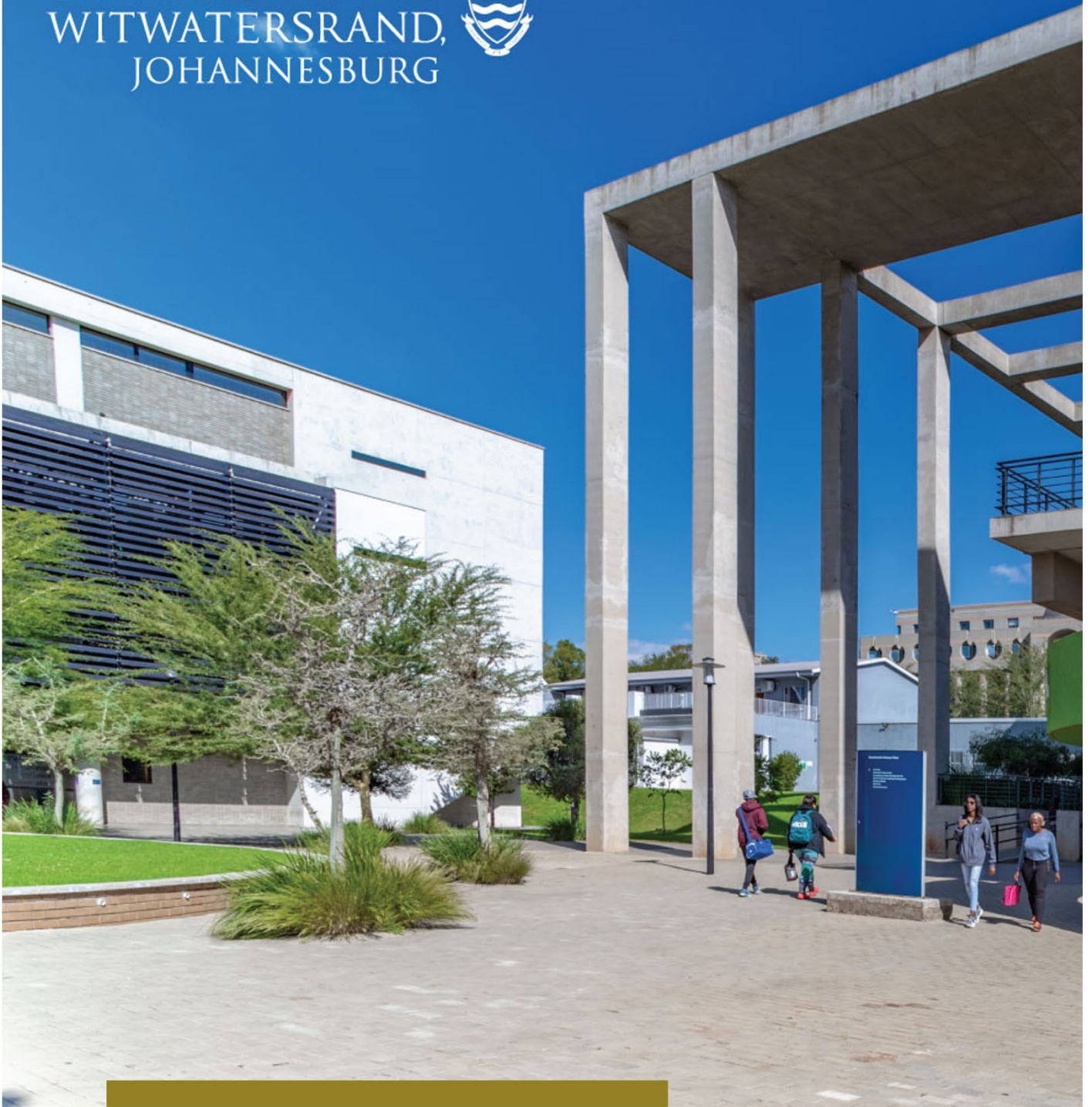


UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG



Faculty of Science Student Guide to Responsible use of Artificial Intelligence for Learning

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Introduction

Tools based on generative artificial intelligence (generative AI) have become widely available and are making their impact felt on many aspects of life, including the world of work and academia. This document provides brief guidelines for students in the WITS Faculty of Science on the ethical and responsible use of generative AI tools in their academic work, including when and how to appropriately use them in learning, research, and assessments. Understanding how to use these tools responsibly is important for maintaining your academic integrity. While these tools can be valuable aids, there are also risks and responsibilities – especially regarding academic misconduct, plagiarism, and overreliance.

What is Artificial intelligence?

Artificial intelligence (AI) broadly refers to computer systems developed to accomplish tasks typically requiring human intelligence. Tools that perform tasks previously thought to be the exclusive preserve of human intelligence have been around for a long time: calculators and mathematical software are able to perform tasks that range from basic arithmetic to solving complex systems of equations, while proof assistants can even help mathematicians find proofs of new theorems. Tasks that in the past used to be complex enough to earn a PhD, such as solving an X-ray crystal structure, are now, with the aid of computation, routine enough to be relegated to the thesis appendix.

What is Generative AI?

One of the most recent and impactful developments in AI is the rise of generative AI tools. These tools have attracted significant public attention, with platforms like ChatGPT, Microsoft Copilot, Google Gemini, Claude, and DeepSeek becoming widely used. They are built on an AI approach known as Large Language Models (LLMs), which can perform various natural language processing tasks, such as generating, classifying, translating, summarising text, and doing literature surveys. These tools can also explain complex concepts in simpler terms, write or complete code, and support brainstorming and problem-solving. Some of the more advanced models are even multimodal - meaning they can interpret and generate not just text, but also images, data visualisations, and, in some cases, audio or video content.

Limitations of Generative AI Tools

Generative AI tools based on LLMs generate their outputs using natural language processing algorithms. When a user inputs a prompt, the system analyses the prompt using patterns in its training data and generates a response. This training data is drawn from a wide range of text sources found on the internet and other repositories. As a result, the outputs are only as good as the data the model has been trained on. If that data includes misinformation, errors, or biased perspectives, the outputs will likely reflect those issues. While it is true that AI tools are increasingly able to access other information resources on the internet, they are still liable to make mistakes and propagate pre-existing biases.

Because these tools operate by predicting the most statistically likely words or phrases—not by reasoning or understanding—they can sometimes produce information that is entirely false or fabricated. Furthermore, generative AI also lacks an understanding of real-world experience, context, or cultural nuance. It cannot truly comprehend subject-specific expectations, tone, or ethical considerations. The outputs it produces may sound plausible but may not be relevant, appropriate, or academically acceptable.

Risks and Considerations for using Generative AI Tools in Higher Education

While a generative AI tool can help you with your learning or preparing for an assignment, its outputs may be inaccurate, outdated, or contain errors and biases. Here are some important things to know before using a generative AI tool, based on the [UNESCO Guidance for generating AI in education and research](#).

- 1. Hallucinations or Inaccuracies in Generated Outputs:** While generative AI outputs may seem authoritative and convincing, its responses are simply based on producing text that is statistically likely in the context of the prompt. As the software has no real understanding of the text it generates, this may result in it “making up” “facts”, something known as “hallucinations”. It is even able to “manufacture” false references to support a theory or argument. The references may appear convincing at first glance, but closer scrutiny shows that these references do not, in fact, exist. Therefore, the outputs of generative AI tools must be verified for accuracy and reliability. It is also advisable to consult additional, trusted sources to ensure that the information provided is appropriate and accurate.
- 2. Relevance and reliability of data set:** Generative AI tools may not have access to the latest information or developments in a field. This means that the outputs it generates may be missing information and thus there is a need to verify outputs against other data sources. Additionally, the sources of the output from generative AI tools cannot be easily verified. Generative AI tools represent information developed by others and so there is the risk of plagiarised content and/or copyright infringement being submitted by a user if they submit text generated by generative AI.
- 3. Built-in biases:** Generative AI tools are trained using datasets that contain implicit and explicit biases (e.g., lack of cultural diversity, racism, sexism, etc.). In other words, generative AI outputs may include historical, representative, algorithmic, ranking, behavioural and social biases. Users must be aware of the potential biases contained in AI generated outputs and should critically evaluate the information before using it.
- 4. Dependence/Over-reliance for Writing or Thinking:** Assessments (such as written assignments) serve the purpose of helping you learn and practice skills relevant for your discipline. While generative AI can help automate some tasks, it is important to guard against over-reliance and to prevent your ability to craft and think critically from being unnecessarily influenced and eroded. It is important to remember the purpose of obtaining your qualification: to ensure that you can think critically and apply what you have learned beyond the university. Thus, if you outsource the thinking work of your assessments to a generative AI tool, you place yourself at a disadvantage.
- 5. Privacy and data risks:** AI systems collect a lot of data (for example, ChatGPT requires registration with an email and phone number), and these systems can track personal information and activity. Open AI’s Privacy Policy clearly states that “By using our Service, you understand and acknowledge that your Personal Information will be processed and stored in our facilities and servers in the United States and may be disclosed to our service providers and affiliates in other jurisdictions”. Therefore, users are strongly advised not to submit any personal or confidential information to generative AI tools.

Generative AI, Academic Integrity and Assessment

While generative AI can be useful to support your studies if used responsibly, intentionally and intelligently, you must always resist the temptation to outsource your academic work to AI. Work submitted for assessments and assignments must be your own. Trying to pass off AI-generated work as your own is a serious form of academic misconduct. Misusing generative AI in academic work may result in disciplinary action against you as outlined in the WITS Student Academic Misconduct Policy.

The [Wits Student Academic Misconduct Policy](#) defines academic misconduct and plagiarism as follows:

Academic Misconduct includes any action which gains, attempts to gain, or assists others in gaining or attempting to gain an unfair academic advantage. It includes Plagiarism as defined below, collusion, cheating, copying, contract cheating, fabrication of data, the use and/or possession of unauthorised materials or devices during an assessment; and falsification or misrepresentation of information including, falsification of a medical certificate, and/or changing a script after it has been marked.

Plagiarism is a form of Academic Misconduct and is described as the failure to acknowledge the ideas and writings of others and/or the presentation of others' ideas or writings as one's own. This definition includes intentional and/or unintentional failure to acknowledge the ideas or writings of others.

Academic integrity can be seen as a commitment to six fundamental values: honesty, trust, fairness, respect, responsibility, and courage. While generative AI can be used ethically and effectively as a learning assistant, its acceptable use varies depending on the course, assignment, and academic level. It is your responsibility to use these tools in accordance with university policy and academic integrity standards. Always follow these key guidelines:

1. Check your course guide and assignment instructions to see whether and how generative AI tools may be used. If you're unsure, ask your lecturer for clarification.
2. If generative AI use is permitted, follow the required acknowledgment practices as outlined in your course. This might include a note in your references, a footnote, or a statement in an appendix. When in doubt, always check with your lecturer.
3. Use generative AI responsibly and within the rules. Misuse—such as unauthorised use or failing to disclose it properly—may be considered academic misconduct and could lead to disciplinary action.
4. Postgraduate students must consult their supervisors about using generative AI in their research (see Appendix A at the end of this document for an AI PG checklist). Acceptable use varies across disciplines, and transparency is key. Any generative AI use in your research or thesis/dissertation writing must be clearly disclosed in the AI declaration form (see end of this document, Appendix B) that must be included in the front matter of your thesis/dissertation or research report at the time of first submission.

Examples of how to use Generative AI for Learning

AI tools are here to stay and can be used to aid your learning but should not be used to complete your assignments. There are several ways generative AI can be used effectively in your learning, such as the examples in the table below:

ETHICAL USE AND DISCLOSURE	
✔ Do's	✘ Don'ts
<p>Use the institution-approved AI tool.</p> <p>Use Microsoft Copilot (https://copilot.microsoft.com/), accessible with your WITS ICT login. Your data stays private and is not used to train the AI, making the use secure and confidential.</p>	<p>Don't use unapproved or public AI tools where data privacy or security could be a concern.</p>
<p>Clearly disclose any use of AI to your supervisor, as well as in your thesis, dissertation, or research report (Appendix A).</p> <p>Respect intellectual property rights when using generative AI tools.</p>	<p>Don't omit AI use in your final submission if it played a role in your research. Lack of disclosure can be considered academic misconduct.</p> <p>Generative AI doesn't always cite its sources, and some outputs may resemble copyrighted content. Always check for originality — especially with code, writing, or images — and when in doubt, revise or ask how to credit it properly.</p> <p>Postgraduates should use the PG AI declaration form to disclose the use of generative AI (Appendix B).</p>
<p>Use generative AI in ways that align with your department's academic integrity guidelines.</p>	<p>Don't use black-box generative AI to help with real-life decisions or advice for others — like medical, legal, or emotional support. Even just drafting responses with black-box generative AI can cross ethical lines. A black box system is one where the inner working and logic of how input is transformed into output cannot be inspected by the user. Systems based on LLMs, like ChatGPT and Gemini are examples of black-box systems.</p> <p>Generative AI is not ethically accountable or professionally qualified. In any field where human wellbeing, legal outcomes, or ethical care is involved, always rely on trained professionals for direct responses or decision-making, and not on black-box generative AI.</p>

STUDYING AND UNDERSTANDING CONCEPTS	
✔ Do's	✘ Don'ts
<p>Use AI to summarise complex topics or readings for better understanding.</p> <p><i>e.g.) >> Can you summarise the main points of this article on climate change in simple terms?</i></p>	<p>Don't copy and paste AI-generated content into assignments and submit it as your own.</p> <p>Don't use simplified AI explanations as substitutes for learning the full concept.</p> <p>Use generative AI to guide your understanding, then write your answers in your own words to show your learning and avoid plagiarism.</p>
<p>Ask AI to explain difficult concepts in simpler terms or from different angles.</p> <p><i>e.g.) >> Can you describe the concept of classical conditioning with a real-life example?</i></p> <p style="padding-left: 40px;">If you obtain information through AI, make sure to factcheck it carefully against independent, reliable sources.</p> <p><i>e.g.) >> Can you be my Socratic tutor to help me understand the Quadratic Equation?</i></p> <ul style="list-style-type: none"> • <i>A Socratic tutor guides learning through questions that prompt reflection and reasoning, rather than giving direct answers.</i> 	<p>Don't rely solely on generative AI instead of engaging with the learning materials yourself.</p> <p>Make use of lecture materials, your own notes, assessments, and the prescribed textbook when studying.</p> <p>Don't assume that AI offers a neutral or universally accurate perspective. Don't assume that all AI answers are factually correct because it may "sound" confident.</p> <p>Always compare AI answers to peer-reviewed sources or experts so that you do not reinforce bias or stereotypes.</p> <p>Remember that generative AI works in a black-box which means that it doesn't "know" anything and can't explain its reasoning. Always validate claims using peer-reviewed sources. Always cite real evidence, never the AI itself.</p>

ASSESSMENT INTEGRITY

✔ Do's	✘ Don'ts
<p>Use AI to generate practice questions or quiz-style prompts to test your knowledge.</p> <p>e.g.) >> <i>Give me 5 multiple choice questions to test my understanding of the periodic table.</i></p>	<p>Don't use AI to generate answers during a closed-book tutorial, test or exam - even if it is just to "check" your answers. This still counts as academic misconduct.</p> <p>AI is a great tool for revision, but not for performance. In assessments, your work should reflect your own understanding. Stick to the rules of academic integrity! Tests are meant to assess <i>your</i> knowledge, not the AI's.</p> <p>Don't rely on AI so heavily that you lose the ability to think critically, identify gaps in your own understanding, or reflect on your reasoning.</p> <p>Remember that your degree is built on independent thought and critical reflection. You always need to be able to explain and defend your work to others.</p>
<p>Answer assessment questions in your own words, based on your understanding of the material - even when using sources. Use generative AI to help clarify concepts, not to rewrite or paraphrase content on your behalf.</p> <p>e.g.) >> <i>Can you help me understand this concept from the article so that I can explain it myself in my assignment?</i></p>	<p>Don't use AI to reword someone else's work and submit it as your own. That's still plagiarism, even if the words are changed.</p> <p>Paraphrasing isn't just changing words; it's showing your understanding. In assessments, always write in your own voice and give credit where it's due.</p>

WRITING, EDITING, AND PRESENTATION	
✔ Do's	✘ Don'ts
<p>Draft your own ideas first, then use AI to improve clarity or structure, not the other way around.</p> <p>e.g.) >> <i>Based on what I have written (my own ideas), can you suggest how to improve the structure or clarity?</i></p>	<p>Don't ask generative AI to write full essays, reports, or other large sections of your assignments. If it is doing the writing, then it is no longer your work.</p> <p>Draft your own work and use AI to brainstorm, refine structure, or check grammar. There is a fine line between support and substitution, and substitution is academic misconduct.</p>
<p>Use AI to get grammar and clarity suggestions on your writing.</p> <p>e.g.) >> <i>Is this sentence clear, or can it be written better?</i></p>	<p>Don't let AI rewrite your work to the point that it no longer reflects your own understanding or voice.</p> <p>Keep your unique thinking in your writing.</p>
<p>Use AI to improve the clarity and formatting of presentations or visuals.</p> <p>e.g.) >> <i>Can you suggest a clearer way to present this chart?</i></p>	<p>Don't rely on AI to design visuals or presentation content without reviewing and adapting it to your own data or message.</p> <p>Use generative AI to generate draft visuals or formatting ideas, then customise them to accurately reflect your findings and communicate your message clearly.</p>

BRAINSTORMING AND RESEARCH DEVELOPMENT	
✔ Do's	✘ Don'ts
<p>Discuss topics with AI to explore multiple perspectives or gain new insights.</p> <p>e.g.) >> <i>How might different cultures view generative AI in education?</i></p>	<p>Don't use AI to fabricate citations or sources—it often invents information that sounds real.</p> <p>Always verify references and quotations using trusted platforms like Google Scholar.</p>

<p>Ask AI to provide links to the references it gives. If the link is broken or goes to the wrong paper, then it's likely a hallucination, i.e. not a real reference.</p> <p>e.g.) >> Can you give hyperlinks to the references you provided above?</p>	<p>Accessing Scopus using your WITS credentials also allows you to use Scopus AI, which can help you explore academic literature by generating concise summaries of research topics, identifying key authors, and suggesting relevant, peer-reviewed sources to support your work.</p>
<p>Use AI to brainstorm or refine research ideas (if permitted).</p> <p>e.g.) >> <i>I'm exploring research ideas related to climate change and food security in South Africa. Can you help me understand current trends or key themes in this area so I can develop my own research question?</i></p>	<p>Don't use AI to develop your research problem, hypothesis, or methodology without discussing it with your supervisor. Especially for postgrads, this must be a collaborative and transparent decision.</p> <p>Use AI to explore background information or brainstorm potential directions, then discuss your ideas with your supervisor so that there is an academic and ethical alignment.</p>

CODING AND DATA ANALYSIS	
✔ Do's	✘ Don'ts
<p>Use AI to help with code writing or debugging (when allowed).</p> <p>e.g.) >> <i>I wrote a Python function to calculate the factorial of a number. Can you help me generate a few test cases to check if it works correctly, including edge cases?</i></p>	<p>Don't submit AI-generated code or data analysis without fully understanding it.</p> <p>Use generative AI to help with debugging, generating test cases, or exploring counterexamples—but always review and understand the output before including it in your work</p>

Conclusion

Generative AI is a powerful tool that can support your learning, research, and academic development - when used ethically and responsibly. As a student in the Faculty of Science, it's important for you to understand both the opportunities and the risks of using generative AI. Always follow course-specific guidelines and act with academic integrity. Remember that university policies around AI use may evolve as the technology develops, so always make sure that you are using the most current guidelines.

APPENDIX A:

Generative AI PG checklist

1. Discussion with your supervisor regarding AI use in your project

You and your supervisor need to discuss up-front whether or not use of generative AI in your project is appropriate. If you decide together that it would be useful and enhance what you can achieve in your research work, and that its use would be ethical, you need to agree on how specifically it will be used.

When? At the start of the project and regularly throughout the duration of the project.

What do I need to do? After your discussion, there needs to be a written record, for example an e-mail, showing what was agreed between you and your supervisor around use of generative AI in your project that both you and your supervisor need to keep a copy of. This can be updated during the course of the project, should changes occur.

2. Inclusion of information in your thesis/dissertation/research report on how generative AI was used

When the time comes to write up your work, if you used generative AI in your research, make sure you include details of exactly what you did in your methodology/experimental section. Discuss with your supervisor the best way to do this, including whether or not the specific prompts used need to be included in the Appendix of your thesis/dissertation/research report.

When? At the start of your write-up

What do I need to do? Details of generative AI use in your project must be included in your experimental/methodology section.

3. Formal disclosure of generative AI use

You need to formally disclose any use of generative AI as part of your research project or project write-up. Failure to do so constitutes a form of academic misconduct and may lead to disciplinary action against you by the university.

When? At the time of first submission

What do I need to do? Signed AI declaration form (available from FoS website) must be included as part of the front matter of your thesis/dissertation/research report.

APPENDIX B:

Wits University Faculty of Science post-graduate student AI declaration

I understand that the use of generative AI tools (such as ChatGPT or similar) without explicitly declaring such use constitutes a form of plagiarism and is classified by Wits University as academic misconduct.

I declare that in the course of conducting the research towards my degree or in the preparation of this thesis/dissertation/research report (select one by marking with an X):

I **did not** make use of generative AI tools

I **did** make use of generative AI tools for the following (tick all that apply):

- 1. Idea Generation (research problem/design, hypothesis)
- 2. Sourcing Related Work (summarising, identifying sources)
- 3. Methods and Experiment Design (experiment setup, model tuning)
- 4. Data Analysis (presentation, coding, interpretation)
- 5. Theoretical Development (theorem proving, conceptual analysis)
- 6. Code Development (generating algorithms, writing scripts)
- 7. Presentation (rendering graphics, formatting)
- 8. Editing (grammar, readability)
- 9. Writing (text generation, document structuring)
- 10. Citation Formatting (structuring, organising)

If other uses were involved, please specify below:

Generative AI tool used (list all)	Used for?

If generative AI tools were used as an integral part of the experimental design or in the direct execution of my research, I confirm that details of this use are clearly outlined in the relevant experimental/methodology chapters of my thesis/dissertation/research report.

Student number:

Candidate signature: _____

Date: _____