FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT

Guidelines for the Use of Generative Artificial Intelligence

in Learning, Teaching, Research and Administration

University of the Witwatersrand, Johannesburg | FEBE | 2026

Preamble

The Faculty of Engineering and the Built Environment (FEBE) at the University of the Witwatersrand (Wits) maintains a pro-technology stance. We encourage our students and staff to study, embrace, and experiment with emerging technologies, including Generative Artificial Intelligence (GAI) tools such as Large Language Models (LLMs). These tools can be powerful aids for improving writing, debugging code, enhancing efficiency, and supporting design, among many other applications.

At the same time, the core of a university education is the development of critical thinking, analytical skills, independent problem-solving, and creative and design-based learning. FEBE does not condone the outsourcing of thought. The purpose of these guidelines is therefore to ensure academic integrity while preparing students and staff for a professional and research world in which GAI is an established tool.

These guidelines sit within the Wits institutional hierarchy as follows:

- University Framework for the fair and productive use of GAI guides this document and takes precedence.
- This FEBE Faculty Guideline applies across all schools and disciplines within the Faculty and can be used in conjunction with the Wits CLTD Guidelines for GAI Use.
- School-level guides, course-specific guidance, and Course Briefs and Outlines (CBOs) are informed by this document and must be consistent with it.

Note: Definitions of key terms (e.g. GAI, LLM, hallucination, POPIA, academic integrity) are provided in the Wits GAI Framework (“An Academic Integrity-Based Framework for the Fair and Productive Use of AI at Wits) and are not repeated here.

1. University-Level Principles

All GAI-related activity at FEBE is anchored in the six principles established by the University. These principles frame and inform all sections of this document.

#	Principle	FEBE Application
a	**Foster AI literacy**	Build the capacity of all staff and students to understand, evaluate, and use GAI tools critically and responsibly within their discipline.
b	**Uphold unwavering academic integrity and personal accountability**	All members of the Faculty are accountable for the integrity of their academic and research output. Unauthorised or undeclared use of GAI constitutes misconduct.
c	**Adapt pedagogical and assessment practices**	Teaching and assessment must evolve to remain meaningful and rigorous in an environment where GAI is widely available. Assessments should target higher-order thinking.
d	**Prioritise human oversight and augmentative use**	GAI is a tool to augment human judgement, not replace it. Final decisions in teaching, assessment, and research remain with people.

e	**Manage institutional risks and promote responsible implementation**	Risks including data privacy, bias, hallucination, and academic dishonesty must be actively managed. POPIA compliance is non-negotiable.
f	**Equitable, inclusive and socially just AI practices**	GAI tools must be deployed in ways that do not exacerbate existing inequalities. Access, bias, and representation must be actively considered.

2. Faculty Mandate

FEBE is responsible for setting and maintaining the faculty-level framework within which all schools, programmes, and individual courses operate. The following are the Faculty's standing responsibilities in relation to GAI.

The Faculty must:

- Publish and maintain this GAI Guideline document and ensure it is accessible to all staff and students.
- Develop and maintain a Faculty-wide Academic Integrity and GAI Declaration document for inclusion in assessments.
- Develop and maintain a standard Faculty-wide GAI statement for all Course Briefs and Outlines (CBOs).
- Provide basic introductory training for Academic and Professional and Administrative Staff (PAS) on responsible GAI use.
- Maintain a shared Teaching and Learning repository of GAI guidance, resources, examples, and case studies.
- Conduct an annual audit of GAI literacy adoption across programmes and report outcomes to the Faculty Executive Committee.
- Publish an annual FEBE GAI Equity Report to monitor access and inclusion.
- Negotiate and facilitate institutional licences for approved GAI tools where feasible.
- Ensure that all Faculty-level assessment policies include appropriate clauses addressing GAI use.
- Develop and maintain a Faculty-level FEBE GAI Fundamentals Micro-Course (online, asynchronous) delivered by the Academic Development Unit (ADU).

3. Guidelines for Students

These guidelines apply to all registered FEBE students. Course-specific rules in your CBO should be read with the general guidance below. When in doubt, ask your course coordinator before using any GAI tool.

3.1 The Traffic Light System

Every FEBE course must include a GAI status in its CBO. The default position for all courses is YELLOW unless explicitly stated otherwise.

Status	Description and permitted use
RED	**GAI Use is Prohibited** Typically, foundational courses or specific assessments are designed to test independent knowledge and skills without external assistance. Examples: invigilated exams, fundamental coding tests, first-principles, analytical assignments. Requirement: No GAI tools of any kind may be used. Any use constitutes misconduct.
YELLOW	**GAI Use is Restricted – Default Position** Students may not use GAI for a task unless expressly permitted in the CBO or assessment brief. Intermediate courses where the course coordinator defines limited, guided use. Typical permitted uses (if stated): grammar and spelling checks; improving clarity of the student's own writing; using GAI as a Socratic questioner to test understanding. Prohibited without explicit permission: generating drafts, writing or completing code, performing analysis, summarising sources not personally read. Requirement: Any permitted use must be declared.
GREEN	**GAI Use is Permitted and Encouraged** Advanced courses where GAI is treated as a standard tool alongside verification protocols. Students are encouraged to use GAI tools within university guidelines. Examples of permitted use: brainstorming, debugging code, summarising complex articles after reading them, rephrasing the student's own work. Requirement: the course coordinator states in the CBO whether use must be declared, in what format, and to what extent.

3.2 Academic Integrity

Failing to acknowledge the use of GAI in work that is submitted for assessment constitutes academic misconduct in the same way as other forms of dishonesty (Refer to Policy document). The following apply to all students across all courses.

Do:

- Read your CBO and any assessment brief carefully to understand the permitted GAI status for that course and task before you start.
- Declare all use of GAI tools in your submission, including what tool was used, for what purpose, and to what extent. Use the Faculty-approved declaration form.
- Cite GAI tools in your reference list using the format specified in your CBO (default: Vancouver/IEEE style for reports, and general academic work, APA style for essays).
- Save your prompts and the full GAI output you received, in case your use is queried.
- Treat GAI output as a resource, not a final answer. All submitted work must reflect your own understanding, reasoning, and voice.
- Verify any factual claims, calculations, or citations produced by a GAI tool using credible primary sources. GAI tools hallucinate: they can fabricate plausible-sounding but entirely false information, including fake references.

Do not:

- Submit AI-generated text, code, calculations, or images as your own work without declaration.

- Use GAI tools in any course or assessment task where they are explicitly prohibited (RED status).
- Upload personal data, student numbers, classmates' information, confidential research data, or copyrighted materials into any online GAI tool.
- Rely on GAI to perform calculations: LLMs are not calculators and produce inconsistent numerical results. Verify all calculations independently.
- Trust GAI-generated citations or references without independently verifying that the source exists and says what the AI claims.
- Use GAI as a substitute for attending class, reading prescribed materials, or doing the thinking required of you.

3.3 Acceptable Uses

The following uses are generally acceptable at YELLOW status or above unless specifically prohibited in your CBO. They are offered as examples, not an exhaustive list.

- Brainstorming and idea generation. This comes with a caveat – ideation will often be the main contribution the student/scholar brings to a task.
- Requesting a plain-language explanation of a difficult concept to support your own reading and understanding.
- Checking grammar, spelling, and sentence clarity in your own written work.
- Generating an outline or structure that you then develop yourself.
- Requesting that a piece of code be explained or debugged (with declaration), where permitted.
- Generating practice questions for self-study.
- Asking GAI to act as a critical questioner to test your understanding of a concept before an assessment.

3.4 Citing GAI

When GAI use is permitted and declared, cite the tool as follows. Check your CBO for course-specific requirements. It is good practice to include the full transcript of the interaction as an appendix to your submission, particularly for research and longer assignments.

In-text example

APA: LLMs will increase in scale and capacity (OpenAI, 2024).

Vancouver: LLMs will increase in scale and capacity, as generated by ChatGPT [1].

Reference list example

APA: OpenAI. (2024). ChatGPT (GPT-4o, May 2024 version) [Large language model]. [one can insert a link to the chat thread or a repository with the full exchange here]

Vancouver: OpenAI. ChatGPT. Personal communication [one can insert a link to the chat thread or a repository with the full exchange here]. 2026 Feb 19.

3.5 Understanding GAI Limitations

Be aware of the following inherent limitations of all current GAI tools:

- GAI tools predict likely next words; they do not reason. They can produce confidently wrong answers, including fabricated citations and fake data.
- Many models have a knowledge cut-off date and are unaware of recent developments in your field.
- Models reflect the biases of their training data, which can include Western-centric perspectives, gender bias, and other social biases. Output in engineering and design contexts may not reflect local conditions, materials, or standards.
- LLMs treat numbers as text and cannot perform reliable mathematical calculations. Never rely on a language model for numerical results.
- GAI tools cannot apply contextual, embodied, or experiential knowledge. For engineering and built environment disciplines, this matters enormously.

4. Guidelines for Researchers

These guidelines apply to all postgraduate students, postdoctoral fellows, and academic staff conducting research under the FEBE umbrella.

4.1 Authorship and Attribution

Do:

- Declare all GAI tool use in the methodology section of your research output, clearly describing the tool used, the purpose, and the extent of use.
- Follow the journal, conference, or funding body's own policy on GAI disclosure. Policies differ and are evolving rapidly; check them before submission.
- Treat GAI as a writing and productivity aid only; the intellectual contribution, analysis, and conclusions must be yours.
- Critically evaluate and verify all GAI-generated content, including literature summaries, before including it in research.

Do not:

- List a GAI tool as an author or co-author on any research output. Authorship requires accountability, which GAI cannot bear.
- Use GAI to generate, fabricate, or paraphrase data, results, or conclusions without explicit disclosure and justification.
- Submit GAI-generated text as your own without declaration; this constitutes research misconduct.
- Upload unpublished manuscripts, confidential data, sensitive participant information, or proprietary content to any public GAI tool.

4.2 Data Privacy and POPIA Compliance

- No personal or identifiable data about research participants may be entered into an online GAI tool. This is a POPIA requirement and non-negotiable.
- Anonymise or pseudonymise data before using any external tool to assist with analysis.
- Be aware that inputs to most public GAI tools may be retained and used for further training by the provider. Treat public GAI tools as public spaces.
- Consult the Wits Research Office or Data Protection Officer if uncertain about the permissibility of using GAI tools in a specific research context.

4.3 Responsible Use in the Research Lifecycle

GAI may appropriately assist with the following research tasks, provided use is declared:

- Literature search assistance and initial summarisation (to be verified by the researcher).
- Drafting and refining written sections, provided the intellectual content originates with the researcher.
- Generating hypotheses or research questions (to be critically assessed before adoption).
- Code generation for data analysis (to be reviewed, tested, and understood before use).
- Formatting reference lists and citations (to be verified for accuracy).

4.4 Bias in Research

GAI tools trained predominantly on Western, English-language datasets may produce outputs that are culturally inappropriate, technically incorrect for South African contexts, or insufficiently representative. Researchers must evaluate outputs critically and ensure that findings are grounded in credible, contextually appropriate sources.

5. Guidelines for Academics

This section applies to all academic staff, including course coordinators, lecturers, and tutors. For assessment-specific guidance, refer to the University Assessment Guide for Staff. 5.1 Teaching with GAI

Do:

- Familiarise yourself with the capabilities and limitations of commonly used GAI tools relevant to your discipline before introducing them into your teaching.
- Specify the GAI status of your course (RED, YELLOW, or GREEN) in the CBO at the start of each semester. The default is YELLOW if not stated.
- Include the Faculty-approved GAI use statement and academic integrity declaration in every CBO.
- Discuss the Faculty's GAI guidelines and your course-specific rules with students during the first class.
- Design activities that help students develop critical GAI literacy: for example, tasks that require students to evaluate, fact-check, and annotate GAI-generated outputs against course materials.
- Disclose your own use of GAI in developing course materials or assessments, modelling transparency for students.
- Use GAI to augment administrative efficiency: generating quiz questions, drafting rubrics, creating draft feedback templates (all require human review before use).

Do not:

- Use GAI to directly grade student work without final oversight, mark allocation, and sign-off done by a person.
- Upload student data, student numbers, assessment submissions, or identifiable student information to any online GAI tool.
- Rely solely on AI detection tools (such as Turnitin's AI detection score) to identify academic misconduct. These tools have high error rates, are biased against non-native English speakers, and cannot provide definitive evidence. Do not base misconduct charges on AI detection scores alone.
- Assume all students have equal access to GAI tools. Prioritise open-source and freely accessible tools (e.g., Microsoft Copilot, Google Gemini) in teaching where possible.

5.2 Assessment Design

The most reliable way to maintain assessment integrity in the GAI era is to design assessments that target learning outcomes which current GAI tools cannot fulfil. The following principles apply.

- Move emphasis from recall and generic written outputs towards higher-order thinking: application, synthesis, critical analysis, and design.
- Incorporate authentic tasks tied to specific local or contextual conditions (site data, lab results, field work) that GAI cannot fabricate credibly.
- Include oral components, viva voce examinations, or panel presentations to verify understanding.
- Scaffold submissions by requiring drafts, annotated notes, or process documentation alongside the final product.
- Require personal reflection and rationale sections that draw on the student's own experience of the task.
- Stress-test your assessment briefs by running them through a GAI tool yourself. If the tool produces an adequate answer easily, redesign the brief.

GAI-Proofing Checklist: Before finalising an assessment, confirm:
(1) the brief states the GAI policy clearly;
(2) the task requires higher-order reasoning;
(3) the task draws on personal, contextual, or process-based elements;
(4) verifiable sources are required;
(5) the brief has been tested against a GAI tool.

5.3 Professional Development

All academic staff are encouraged to

- Engage with FEBE and Wits CLTD training offerings on GAI in teaching and learning.
- Participate in the FEBE GAI Champions Network (To be established) to share practice, resources, and peer support.
- Stay current with developments in GAI tools relevant to your discipline. The landscape changes rapidly.
- Contribute to the peer review of school-level GAI guides and assessment policies.

6. Guidelines for Professional and Administrative Staff (PAS)

This section applies to all Professional and Administrative Staff supporting FEBE, including faculty office staff, school administrators, finance staff, and technical support personnel.

6.1 Permitted Uses

PAS may use GAI tools to assist with day-to-day administrative tasks, subject to the requirements below. Examples of appropriate use include:

- Drafting routine correspondence, meeting agendas, minutes (with caveats), and reports for human review and sign-off.
- Summarising lengthy documents or meeting notes to support internal communication.
- Generating templates for forms, procedures, or communications.

- Assisting with proofreading and plain-language editing of official documents.

6.2 Requirements and Limits

Do:

- Review and edit all GAI-generated content before sending, publishing, or filing. You remain responsible for accuracy.
- Disclose to recipients where appropriate that a document was drafted with GAI assistance, particularly for external correspondence.
- Use only university-approved or widely accessible tools. Consult your line manager if uncertain.

Do not:

- **Enter student personal data, staff personal information, financial records, confidential HR data, or any information protected under POPIA into a public GAI tool.**
- Use GAI to make administrative decisions. GAI output is a draft; it requires human judgement and sign-off.
- Share university proprietary information, unpublished research data, or confidential institutional content with external GAI platforms.

> **POPIA Reminder:** The Protection of Personal Information Act (POPIA) prohibits the transfer of personal information to third-party platforms without appropriate authorisation and data processing agreements. Public GAI tools typically do not meet this standard. When in doubt, do not upload.

7. Guidelines for Schools

This section sets out the responsibilities and required actions of each School within FEBE. Heads of School are responsible for implementation.

7.1 School Responsibilities

- Develop and maintain a school-level GAI guide for staff that addresses disciplinary-specific uses, risks, and good practice within the school's field of expertise.
- Develop and maintain a school-level GAI guide for students, tailored to disciplinary conventions and year-of-study progression.
- Design and publish a school-level GAI integration plan for curriculum, covering all years of study and aligned with the progressive framework below.
- Train and inform academic staff about the possibilities and risks of GAI within their specific disciplines.
- Ensure all PAS attend faculty specific training on responsible GAI use.
- Ensure that every CBO within the school contains the Faculty-approved GAI statement and specifies the course's GAI status.
- Ensure all school-level assessment policies include updated clauses for GAI-related academic integrity, appropriate to the discipline.
- Monitor, evaluate, and report to the Faculty on the implementation of GAI guidelines within the school.

- Map access inequalities within the school (computer lab availability, connectivity, device access) and report these in the annual FEBE GAI Equity audit.
- Prioritise open-source and freely accessible tools in teaching to reduce access barriers.

7.2 Curriculum Integration: A Progressive Framework

Schools should embed GAI integration into the curriculum progressively across years of study. The following provides a reference framework. Schools may adapt it to suit their discipline but must publish their approach in their school-level implementation plan.

Year / Level	Teaching Approach	Assessment Approach	Default Status
Years 1-2 Foundational	Focus on first principles, manual calculations, independent problem-solving, textual, spatial, and technical analysis, and analytical writing. Introduce AI literacy through controlled examples that highlight both capabilities and limitations. Establish 'AI-restricted zones' for key foundational skills.	Primarily traditional closed-book, process-focused assessments. Simple AI-verification exercises (e.g., 'identify the error in this AI-generated solution'). Reflective comparisons of manual versus AI-generated outputs.	**Predominantly RED with selective YELLOW**
Year 3 Transitional	Hybrid models combining traditional teaching with structured GAI augmentation. Structured prompt-engineering workshops. Comparative learning: AI-assisted versus traditional approaches.	Open AI assessments with justification requirements. 'Critique the AI' exercises. Design challenges requiring verification of AI suggestions with independent calculations.	**YELLOW (default). Selected GREEN tasks**
Years 4+ Advanced	GAI as a standard engineering and design tool, with emphasis on verification protocols. Industry-aligned projects using GAI for complex problems. Students define ethical usage boundaries within their discipline.	Complex verification case studies using multiple AI systems. AI-augmented research and design projects with robust validation frameworks. Conflict resolution between differing AI recommendations requiring nuanced professional judgement.	**GREEN with YELLOW for specific tasks**

7.3 School Implementation Timeline (Reference)

- Year 1: Staff upskilling, CBO compliance, and foundational course protection.
- Year 2: Introduction of course-specific GAI guidance and assessment redesign.
- Year 3: Full progressive integration across the curriculum.
- Onwards: Annual evaluation, refinement, and reporting on outcomes.

8. Resources

8.1 Wits University Resources

- Wits Academic Framework for the Fair and Productive Use of AI
- Wits Strategic Plan for Research (2023 – 2027).
- Wits Strategic Plan for Postgraduate Research Training (2023 – 2027).
- Wits Learning and Teaching Strategic Plan for 2025-2029.
- Wits Student Academic Misconduct Policy (Version 3)
- Wits CLTD Guidelines for GAI Use in Learning, Teaching, and Research (December 2024).
- Wits Academic Integrity Policy.
- FEBE Faculty GAI Declaration Form (maintained by the Faculty T&L Office).
- FEBE AI Champions Network (contact the Faculty T&L Office to join).
- FEBE GAI Fundamentals Micro-Course (online, asynchronous) -- contact the ADU for access.

8.2 Citation Guidance for GAI Tools

- Vancouver and APA guidance for citing GAI (Wits Library): consult the Wits Library website for the current Vancouver and APA-style guide for generative AI tools.
- Harvard style guide for generative AI: https://libguides.ucd.ie/harvardstyle/harvardgenAI

8.3 Teaching and Learning Resources

- MIT Sloan Teaching & Learning Technologies -- Effective Prompts for AI: https://mitsloanedtech.mit.edu/ai/basics/effective-prompts/
- AI Detectors Don't Work. Here's What to Do Instead (MIT): https://mitsloanedtech.mit.edu/ai/teach/ai-detectors-dont-work/
- AI for Education -- Free Resources for Schools and Classrooms: https://www.aiforeducation.io/ai-resources-main
- Cornell Centre for Teaching Innovation -- Generative AI: https://teaching.cornell.edu/generative-artificial-intelligence
- Columbia University CTL -- Considerations for AI Tools in the Classroom: https://ctl.columbia.edu/resources-and-technology/resources/ai-tools/

8.4 Key References

- Bekker, M. (2024). Large Language Models and Academic Writing: Five Tiers of Engagement. South African Journal of Science, 120(1/2). https://doi.org/10.17159/sajs.2024/17147
- UNESCO (2023). Guidance for Generative AI in Education and Research.

For queries, contact the Faculty Registry.

RESOURCES

1. Academic Integrity and Generative GAI Declaration

I,_____
(name)

Student number: _____,

- This assignment/essay/proposal/research report is **my own original work**.
- I am familiar with the **University's Student Academic Misconduct Policy** and its **Academic Integrity Framework** for **the Fair and Productive Use of AI,** and I understand the definitions and consequences of plagiarism and improper use of AI tools.
- I have **appropriately cited** and referenced all sources, whether human- or AI-generated, in accordance with the required specific referencing styles.
- I understand that using text, ideas, or outputs from any source—**including AI tools**—without proper attribution constitutes academic misconduct.
- I have not asked or paid any third party (human and / or AI service provider) to complete this work on my behalf.
- I have not allowed and will not allow anyone to copy my work or pass it off as their own.

Specific Use of AI

- If I used **AI tools,** I confirm that I have done so **responsibly** and in accordance with the University's fair use framework and the instructions given for any academic task or assignment.
- All AI-generated content has been:
  - **Reviewed and critically assessed** by me,
  - **Properly acknowledged and cited**, and
  - **Clearly contextualised** as part of my own scholarly work.
- If AI was used in the **design, analysis, writing, or execution** of research or assignments, I have disclosed this usage in the relevant sections (e.g., methodology or acknowledgements) of my work.
- I understand that I remain **fully accountable** for the academic integrity, accuracy, and originality of all submitted work, even if any AI tools were used.

Declaration of Use:
Please select one:

☐ I confirm that **I did not make use** of GAI tools.

☐ I confirm that **I did make use** of GAI tools as part of this work, but did so within the following parameters:
Reference the name/s of the Generative AI model/s used (if applicable):

_____
_____

Signature: _____

Date: _____

2. Examples of CBO GAI statements

For courses or subject sections where the Use of generative AI is not permitted,

"Our academic community depends on integrity, shared responsibility, and academic honesty. All work in this course must be your original work and completed in accordance with the [University's academic integrity policy]. You may not use ChatGPT or other generative AI software at any stage or in any phase in any type of work in this course, even when properly attributed. **[Insert discipline- or context-specific reasons for this, including skill building, concerns regarding equity, etc.]** If you have questions about what is permissible at any point in the semester, please reach out to me."

For courses or subject sections where the Use of generative AI is permitted

"We may incorporate ChatGPT and other generative AI software during this course **[here the specific uses could be noted depending on the course and discipline].** Students will be informed about when, where, and how to use such tools for classwork and assignments, along with specific instructions for attribution. Outside of these approved uses, ChatGPT and other generative AI software are not permitted. They must be specifically approved by the instructor. [If you would like them to cite these tools: Any and all use of ChatGPT and other AI software at any stage of completing assignments for this course must be properly cited in your work using **[insert style guide or approach to citation];** neglecting to do so may constitute a violation of the University's academic integrity code. If you have questions about what is permissible at any point in the semester, please reach out to me. Please also note that this policy applies only to my class, and it is your responsibility to check with each instructor if ever you are unsure about what constitutes academic honesty in their class."

3. Example School-level Assessment Policy clauses

Use of AI tools to generate/augment text and/or imagery is acceptable, but must meet the following conditions:

1. The rules of GAI use, outlined below, apply to all forms of output, including, but not limited to:
   a) Written work;
   b) Image production of any form;
   c) Design and/or construction work;
   d) Coding
   e) Conceptual intentions.
   f) …… (should be expanded per revised per area of study)

2. Where generative AI (GAI) tools are used, the onus is on the student to ensure that GAI is used ethically and within the normal guidelines of ethical professional standards.

3. AI-generated content must be clearly contextualised as part of the relevant scholarly work being assessed.

4. Unless otherwise specified in the course outline, the means and methods of use of GAI must be clearly indicated on any submission or reassessment, and documentation muse include, where appropriate:
   a) A summary explanation of procedures undertaken, prompts used, and other relevant details of the generation process, included as part of the original submission;
   b) A summary explanation of the results obtained from these processes, and how they are used in the final output, included as part of the original submission;
   c) In the case of written output, a detailed record of the interaction, to be availed upon request;
   d) In the case of design-based or other visual representation, a record of the iterative process and interim output produced during the process, to be availed upon request.

5. Data, published information, or ideas carrying copyrights must be fact-checked by the student, and the root source cited appropriately.

6. Unless otherwise specified in the course outline or assessment instructions, GAI output must be reviewed and substantially edited or post-processed by the student, to an extent that the final material may be considered of the student's own primary authorship.

7. Lecturers may expand on the rules of GAI use, or prohibit such use, within each course as specified in the course outline.

8. If a student is suspected of using GAI in ways not consistent with the rules outlined above, that student may be subject to additional methods of assessment as deemed appropriate by the Lecturer for the purpose of verifying the student's authorship and/or knowledge of the relevant subject matter.

4. Example scaffold structure for school implementation guide

Vision
A progressive integration of AI across all educational years, enabling students to become effective AI collaborators who can critically evaluate outputs and ensure engineering safety and innovation.

Foundational Years (1-2): Building Independent Thinking
Teaching Approach
- Focus on first principles and manual calculations to build core engineering intuition.
- Introduce AI literacy through controlled examples showing both capabilities and limitations.
- Establish "AI-restricted zones" for key foundational skills development

Digital Learning Partners (DLPs)
- Basic question-prompting DLPs focused on conceptual understanding
- Level 1 critical questioning: "Why" and "How" questions on engineering fundamentals
- DLPs actively developing learners' questioning abilities
- Guided AI interaction sessions with instructor feedback

Assessments
- Traditional closed-book exams with emphasis on process over product
- Simple AI verification exercises: "Find the error in this AI-generated solution"
- Reflective assignments comparing manual solutions with AI-generated alternatives

Intermediate Years (3): Transitional Integration
Teaching Approach
- Hybrid teaching models combining traditional methods with AI augmentation
- Structured AI prompting workshops for engineering-specific challenges
- Comparative learning: AI-assisted versus traditional approaches

Digital Learning Partners
- Level 2 critical questioning: integration of cross-domain knowledge
- DLPs actively developing learners' questioning abilities at this higher level
- DLPs present deliberately flawed solutions requiring student correction
- Paired learning experiences between students with DLP facilitation

Assessments
- Open AI assessments with justification requirements
- "Critique the AI" exercises with conflicting AI-generated solutions
- Design challenges requiring verification of AI suggestions with calculations

Advanced Years (4+): Full AI Integration
Teaching Approach
- AI as a standard engineering tool with emphasis on verification protocols
- Industry-aligned projects leveraging AI for complex engineering problems
- Student leadership in defining ethical AI usage boundaries

Digital Learning Partners
- Level 3 critical questioning: novel applications and theoretical limits
- DLPs actively developing learners' questioning abilities at this higher level
- DLPs simulating real engineering scenarios with incomplete information
- Student-directed DLP interactions focusing on research-level inquiry

Assessments
- Complex verification case studies with multiple AI systems
- AI-augmented research projects with robust validation frameworks
- Conflict resolution between subtly differing AI recommendations requiring nuanced engineering judgement

5. Example Baseline Assessment for GAI Knowledge and Risks (with example development strategy)

Student Baseline Measurements

Independent Thinking Assessment

- Diagnostic problem-solving exercises without AI assistance
- Structured observations of student reasoning processes
- Pre-implementation skills inventory focusing on:
  - Mathematical reasoning without computational aids
  - First-principles application in engineering scenarios
  - Error identification in the provided solutions
  - Confidence in solutions without external validation

Critical Thinking Baseline

- Standardised critical thinking assessments adapted for engineering contexts.
- Analysis of existing coursework for critical evaluation components
- Scenario-based assessments with deliberately flawed information
- Metacognitive reflection exercises on problem-solving approaches

AI Familiarity Inventory

- Current AI usage patterns across student cohorts
- Self-reported confidence in AI tool operation
- Assessment of prompt engineering capabilities
- Understanding of AI limitations in engineering applications

Staff Baseline Capture

Attitudinal Survey

- Comprehensive anonymous survey addressing:
  - Current comfort level with AI technologies
  - Specific concerns about academic integrity
  - Perceived threats to Teaching effectiveness
  - Opportunities identified for curriculum enhancement
  - Willingness to integrate AI into teaching practices

Knowledge Assessment

- Current understanding of AI functionality in engineering contexts
- Awareness of available AI tools relevant to specific disciplines
- Self-reported confidence in distinguishing AI-generated work
- Familiarity with ethical considerations in AI usage

Pedagogical Concerns Documentation

- Focus group discussions on teaching philosophy tensions
- Documentation of specific course elements perceived as vulnerable
- Collection of existing strategies for maintaining rigour
- Identification of assessment methods requiring protection or modification

Technical Capacity Audit

- Current digital skills inventory relevant to AI integration
- Specific technical training needs assessment
- Hardware and software access evaluation
- Support requirements identification

Implementation Readiness Analysis

School Culture Assessment

- Current attitudes toward innovation and change
- Historical responses to educational technology adoption
- Identification of potential champions and resistors
- Documentation of existing collaborative practices

Resource Gap Analysis

- Technical infrastructure requirements versus current provision
- Staff development time allocation possibilities
- Student support services readiness
- Learning space suitability for AI-integrated activities

Regulatory Compliance Evaluation

- Alignment with current academic integrity policies
- Accreditation body requirements and potential conflicts
- Data protection and privacy considerations
- Intellectual property implications for course materials

This baseline data will establish meaningful comparisons for measuring the effectiveness of AI integration initiatives while acknowledging and addressing legitimate concerns from all stakeholders before implementation begins.

Staff Development Strategy

Short-term (0-6 months)

- Faculty AI literacy bootcamps focusing on fundamentals
- Development of AI teaching guidelines per course level
- Formation of AI Champions network across streams

Medium-term (6-18 months)

- Subject-specific AI application workshops
- Collaborative redesign of course materials for AI integration
- Peer observation and feedback on AI-integrated Teaching

Long-term (18+ months)

- Advanced AI specialisation for interested staff
- Curriculum redesign committees with AI integration focus
- Research into engineering-specific AI pedagogy

Implementation Timeline

1. **Year 1**: Staff upskilling and foundational course preservation
2. **Year 2**: DLP introduction and assessment redesign
3. **Year 3**: Full integration into advanced courses
4. **Year 4**: Evaluation and refinement based on outcomes

Success Metrics

- Student proficiency in both manual and AI-augmented problem solving
- Critical thinking assessment scores against benchmarks
- Industry feedback on graduate AI collaboration skills
- Staff confidence in AI teaching techniques
- Publication of engineering education research on AI integration

This framework ensures students develop from independent thinkers into skilled AI collaborators capable of safely applying and critically evaluating AI in engineering contexts.

Baseline Assessment Strategy for AI Integration

Student Baseline Measurements

Independent Thinking Assessment

- Diagnostic problem-solving exercises without AI assistance
- Structured observations of student reasoning processes
- Pre-implementation skills inventory focusing on:
    - Mathematical reasoning without computational aids
    - First-principles application in engineering scenarios
    - Error identification in the provided solutions
    - Confidence in solutions without external validation

Critical Thinking Baseline

- Standardised critical thinking assessments adapted for engineering contexts
- Analysis of existing coursework for critical evaluation components
- Scenario-based assessments with deliberately flawed information
- Metacognitive reflection exercises on problem-solving approaches

AI Familiarity Inventory

- Current AI usage patterns across student cohorts
- Self-reported confidence in AI tool operation
- Assessment of prompt engineering capabilities
- Understanding of AI limitations in engineering applications

Staff Baseline Capture

Attitudinal Survey

- Comprehensive anonymous survey addressing:
    - Current comfort level with AI technologies
    - Specific concerns about academic integrity
    - Perceived threats to Teaching effectiveness
    - Opportunities identified for curriculum enhancement
    - Willingness to integrate AI into teaching practices

Knowledge Assessment

- Current understanding of AI functionality in engineering contexts
- Awareness of available AI tools relevant to specific disciplines
- Self-reported confidence in distinguishing AI-generated work
- Familiarity with ethical considerations in AI usage

Pedagogical Concerns Documentation

- Focus group discussions on teaching philosophy tensions
- Documentation of specific course elements perceived as vulnerable
- Collection of existing strategies for maintaining rigour
- Identification of assessment methods requiring protection or modification

Technical Capacity Audit

- Current digital skills inventory relevant to AI integration
- Specific technical training needs assessment
- Hardware and software access evaluation

- Support requirements identification

Implementation Readiness Analysis

School Culture Assessment

- Current attitudes toward innovation and change
- Historical responses to educational technology adoption
- Identification of potential champions and resistors
- Documentation of existing collaborative practices

Resource Gap Analysis

- Technical infrastructure requirements versus current provision
- Staff development time allocation possibilities
- Student support services readiness
- Learning space suitability for AI-integrated activities

Regulatory Compliance Evaluation

- Alignment with current academic integrity policies
- Accreditation body requirements and potential conflicts
- Data protection and privacy considerations
- Intellectual property implications for course materials

This baseline data will establish meaningful comparisons for measuring the effectiveness of AI integration initiatives while acknowledging and addressing legitimate concerns from all stakeholders before implementation begins.

6. Example of course-specific guidance strategies: The Traffic Light System for Course-Specific Guidance

RED: GAI use is prohibited
YELLOW: guided use of AI
GREEN: unrestricted use of AI

RED - Fundamental courses or courses which introduce students to the fundamentals of an area of study should be coded RED, with limited or no Generative AI tools permitted. These are typically tasks designed to teach or assess a student's foundational knowledge and skills without external assistance.

Yellow - An intermediate course, or Course, in which students have understood the fundamentals and can critically discuss and analyse the subject matter. Students may be introduced to critical and creative approaches to the use of GAI tools.
Students may not use LLMs for a task unless expressly permitted for that specific task. The course coordinator will provide clear instructions on what, if any, AI use is allowed.

Examples of Permitted Use (if specified): Checking grammar and spelling, improving the clarity of a student's own sentences, acting as a "Socratic questioner" to test understanding of a concept.

Examples of Prohibited Use: Generating drafts of paragraphs or sections, writing or completing code, performing analysis, summarising sources the student has not personally read.
Requirement: Any permitted use of AI must be declared.

In an advanced-level course or course where the basics have been mastered, there may be no restrictions on students' use of AI. Still, its use should fall within university guidelines for responsible, fair use and for AI-related plagiarism.

The Traffic Light System for Course-Specific Guidance

To provide clarity and flexibility, each course must include a guide on the permitted use of AI in its Course Brief and Outline (CBO). This guide will follow a traffic light system.

The default position for all courses in the School is YELLOW. A course will only be considered RED or GREEN if explicitly stated in the CBO.
GREEN: AI Use is Permitted and Encouraged
In these courses or on these tasks, AI tools are considered valuable for learning and development. Students are encouraged to use them, provided they follow any specific rules laid out by the course coordinator.

Examples of Permitted Use: Brainstorming ideas, debugging code snippets, summarising complex articles after reading them to check for understanding, rephrasing a student's own work for clarity.

Optional requirement: The course coordinator will state explicitly in the CBO whether use of AI must be declared, how, and following what format.
YELLOW: AI Use is Restricted (Default Position)

Students may not use LLMs for a task unless expressly permitted for that specific task. The course coordinator will provide clear instructions on what, if any, AI use is allowed.

Examples of Permitted Use (if specified): Checking grammar and spelling, improving the clarity of a student's own sentences, acting as a "Socratic questioner" to test understanding of a concept.

Examples of Prohibited Use: Generating drafts of paragraphs or sections, writing or completing code, performing analysis, summarising sources the student has not personally read.
Requirement: Any permitted use of AI must be declared.

RED: AI Use is Prohibited

For the course or a specific assessment, the use of any Generative AI tool is forbidden. These are typically tasks designed to assess a student's foundational knowledge and skills without external assistance.
Examples: In-person invigilated exams, tests of fundamental coding skills, specific analytical assignments.