

AI Coach Level 1 — course syllabus

Professional development for teachers running an artificial intelligence programme in a school. Twenty hours, aligned to the Australian Professional Standards for Teachers at the Proficient level.

Why this course exists

For two decades, competitive computing rewarded one student deriving one algorithm alone. That discipline has not disappeared, but it is no longer the whole picture. The skill now being assessed — in universities, in industry, and in the international olympiads — is the direction of capable AI agents: framing a problem, delegating the parts a machine can do, verifying what comes back, and owning the result. Programming and algorithms remain the foundation; what has changed is the work built on top of them.

Teachers are being asked to lead this before any syllabus has caught up, and usually without a background in the field. This course exists to close that gap. It does not ask a teacher to become a machine-learning engineer. It gives a teacher the current vocabulary of AI work, the judgement to supervise it honestly, and the confidence to send students into genuinely hard technical material knowing what good work looks like and how to recognise it.

The result is a teacher who can open the AI world to students rather than gatekeep it: who can set a defensible policy on AI use, tell real work from delegated work, select a team on evidence, and stand in front of a principal or a parent and explain exactly what the students are doing and why.

Course	AI Coach Level 1 — Accredited AI Coach
Delivered by	Australian STEM and Robotics Advancement Association Incorporated
Total duration	20 hours — 14 hours self-directed, 4 hours facilitated seminar, 2 hours assessment
Structure	48 modules in 4 phases, each phase closing with a scenario checkpoint
Mode	Self-directed component online at your own pace; seminar delivered live online
Assessment	4 scenario checkpoints during the course, then a 40-question situational examination (90 minutes, 70% to pass, two attempts)
Standards level	Proficient Teacher
Prerequisite	Complete the first phase of any student track on a linked student account
On completion	Certified as an Accredited AI Coach (Level 1) for three years, listed in the coach register at ioai.org.au
Prior knowledge	None. The course does not teach or require programming.

Indicative hours

Hours are notional and reflect the time a teacher without a programming background is expected to spend. The self-directed component is not timed: a participant may take longer without penalty.

Component	Detail	Indicative time
Phase 1 • self-directed	From the thesis to a running classroom — 12 modules at approximately 17 minutes, plus an 8-minute scenario checkpoint	3 h 30 min
Phase 2 • self-directed	The AI stance, integrity and duty of care — 12 modules at approximately 17 minutes, plus an 8-minute scenario checkpoint	3 h 30 min
Phase 3 • self-directed	Coaching the learning, choosing the team — 12 modules at approximately 17 minutes, plus an 8-minute scenario checkpoint	3 h 30 min
Phase 4 • self-directed	Competition week and beyond — 12 modules at approximately 17 minutes, plus an 8-minute scenario checkpoint	3 h 30 min

Component	Detail	Indicative time
Facilitated seminar	Four live sessions of one hour, one per phase (see below)	4 hours
Assessment	Examination briefing, the 90-minute paper, and feedback	2 hours
Total		20 hours

The four facilitated hours

Time	Session	What happens
1 hour	Devices clinic	Bring your own school image: install, proxy allow-list and the five failure symptoms, worked live.
1 hour	Integrity workshop	Two real submission cases reviewed as a group; drafting the AI-use line you will give your class.
1 hour	Selection moderation	Two close candidates moderated across the group, then defending the decision to a parent.
1 hour	Competition week run-through	The T-7 checklist against your own calendar, and the incidents that actually arrive on the day.

Alignment to the Australian Professional Standards for Teachers

Course strand	Focus areas	How it is addressed
Orientation	2.1 · 6.2	What is assessed in AI competition work, and how it relates to current practice
Installation and devices	2.6 · 3.4	Provisioning a shared or 1:1 device set; offline and low-bandwidth fallbacks
Accounts and access	3.4 · 7.2	Issuing, binding and recovering student access; record-keeping obligations
Integrity	4.5 · 7.1	Setting an AI-use policy; distinguishing assistance from substitution; acting on evidence
Safeguarding and compliance	4.4 · 7.2	Australian policy in three tiers; data minimisation; what is never collected about a student
Selection and fairness	1.5 · 5.1 · 5.4	Placement by readiness; evidence-based team selection; common sources of unfairness
Learning method	1.5 · 2.1 · 3.5	Session structure, the research block, responding to a stuck student
Competition day	3.5 · 5.1	Running a supervised contest session and debriefing performance afterwards
Sustainable coaching	6.2 · 6.3	Workload realism, building in a second staff member, using the coach network
Reading student work	2.1 · 2.6	Reading a student's history and contest attempt as a coach

Focus areas addressed: 1.5, 2.1, 2.6, 3.4, 3.5, 4.4, 4.5, 5.1, 5.4, 6.2, 6.3, 7.1, 7.2. Primary emphasis on 4.5, 7.1 and 4.4 (integrity, ethics and safety) and on 1.5 and 5.4 (differentiation and evidence-based selection).

Module outline

Each module is a short reading followed by a comprehension check. The twelfth module of every phase is a worked scenario that carries the phase checkpoint.

Phase 1 — From the thesis to a running classroom

#	Strand	Module	Focus
1	Orientation	From the algorithm era to the AI-agent era	Olympiads once rewarded one student deriving one algorithm alone; the skill now tested is directing capable AI helpers under the same contest honesty rules.
2	Orientation	Why the whole programme lives in a terminal	The terminal is the native habitat of agent work: asking, running, checking and recording happen in one keyboard loop on a thin client whose answers stay server-side.
3	Orientation	Three competitions, one pathway	IOAI, IAIO and ICOA are three separate olympiads on one student pathway; ASRA accredits Australian national teams and founded ICOA, whose Foundation issues coach standards.
4	Orientation	The four medal tracks — what a student does	ai4ctf uses AI as a teammate, ctf4ai attacks and evaluates AI systems, ctf4eai covers embodied-AI security, and worldmodel is the world-model arena.
5	Orientation	Why a black terminal, not a browser	Law caps social accounts at sixteen, schools ban phones, health guidance suggests two recreational hours: policy subtracts, and the CLI is what the remaining screen looks like.
6	Orientation	What a coach does — and never does	You prepare machines, teach the method, hold the integrity line and carry appeals; you never touch student code in a contest and never ghost-write research.
7	Installation and devices	Install in one command, on one version line	Install and upgrade are the same one-line command and the banner shows the version; the runtime line is Node 22 and Python 3.12 as floors, never “the latest” Python.
8	Installation and devices	Four platforms — and on Windows it is WSL2	Chromebook, macOS Terminal.app, Ubuntu and Windows via WSL2 inside Windows Terminal all work; native cmd and PowerShell are not supported at all.
9	Installation and devices	Getting school IT on side: the allow-list	IT must allow the npm registry, the installer’s code host, the practice server and the public dataset bucket; proxies blocking these are the top school install failure.
10	Installation and devices	When install fails: five symptoms, five answers	The proxy block, the Windows store stub, the Chromebook standalone Python build, an out-of-date client and a too-narrow terminal each have one settled answer.
11	Installation and devices	School machines, home machines, and bandwidth	Weekend-resetting school images wipe local state and shared family laptops collide on binding; daily traffic is tiny but first dataset pulls are not.
12*	Installation and devices	Putting it together: Monday morning, 25 students	Work one first lesson end to end: eight shared machines, a token sheet, a school proxy, a Windows laptop and a Chromebook all running inside the hour.

* **Checkpoint 1 — Monday morning: 25 students, 8 Chromebooks, one token sheet.** Eight situational questions, 8 minutes. Cases include: A student on Windows opened the classic command prompt and nothing runs — what do you tell them; On a Chromebook the installer pulls a standalone Python 3.12 build; a student says it is broken; The install dies behind the school proxy ten minutes into the lesson; A keen student installed the newest Python version at home and now the ML stack fails.

Phase 2 — The AI stance, integrity and duty of care

#	Strand	Module	Focus
13	Learning method	AI as a teammate: decompose, delegate, verify, own	Break the task into pieces a helper can do, ask for something runnable rather than a conclusion, run it, check it against the sample, then sign and explain it.
14	Accounts and access	One token, one student, one device — and hygiene	A learn token is one student's key to one curriculum and binds to the first device it opens on; sheets never go in group chats and students never swap tokens.
15	Integrity	Three observers on every submission	A content-addressed code archive, aggregate input dynamics and per-test judge timing watch every arena submission; the keys a student types are never stored as text.
16	Integrity	Typed or pasted: reading the evidence	Four lines of evidence are cross-checked to separate typing from pasting; an archive collision is itself the finding, and a reviewer states what the data cannot prove.
17	Integrity	AI policy: encouraged, bound, and logged	In learning the AI is encouraged but bound to the current card's topic; refusals are logged with the full question, and every contest carries its own AI rule line.
18	Integrity	Why students see only part of a failing test	Error disclosure is tiered so a failing test cannot leak the test set; problems are original or re-skinned, official output files stay uncirculated and judge packs stay private.
19	Integrity	Sanctions exist — and so does coach integrity	Escalation runs evidence review, coach informed, committee decision, and a ban has been issued at a final; coaches must not multi-register or climb boards with test tokens.
20	Safeguarding and compliance	Where your students' data actually lives	Tokens, progress and submissions live on the practice server; the copy on the laptop is signed but the server is authoritative, and off-site backups are kept sixty days.
21	Safeguarding and compliance	Nicknames on boards, never real names	Public boards show nicknames only; a coach gets per-token views through the organisers, and the CLI never publishes a student's real name anywhere.
22	Safeguarding and compliance	No flags anywhere — countries as words	Flags are never drawn in any interface or material: they break terminal rendering and carry political risk across the participating countries, so the country's name is written out.
23	Safeguarding and compliance	US cloud and sanctions: residence, not nationality	All infrastructure sits on United States cloud providers, so comprehensively sanctioned jurisdictions are unreachable; the test is where a student lives and workarounds are never arranged.
24*	Integrity	Putting it together: a submission that looks pasted	Work one integrity case from the first odd signal to a decision, alongside the privacy, AI-policy and compliance questions that tend to arrive in the same week.

* **Checkpoint 2 — The submission that looks pasted — and the week around it.** Eight situational questions, 8 minutes. Cases include: Two students' solutions land on the same archived file; Input dynamics show almost no backspaces and a single paste event on a hard problem; A parent asks you to ban AI in the club — what do you say; A student submits code they cannot explain in a two-minute conversation.

Phase 3 — Coaching the learning, choosing the team

#	Strand	Module	Focus
25	Learning method	The rhythm of a card — and the shape of an hour	Read, yes/no check, per-card practice, a checkpoint every fourth card: the card is the lesson unit, and the weekly pattern is cards and contest anytime, research in its window.

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26	Learning method	The soft practice gate — and why skip still works	On fill-form tracks a card will not turn while its practice is untouched; skip always works and is recorded, and any submission counts whether it is right or wrong.
27	Learning method	Two passes and the 123-question tutor loop	Top students read twice and interrogate the AI relentlessly — one asked a hundred and twenty-three questions on a track; questions, not answers, are the habit you coach.
28	Learning method	Research that scores: three runnable code sections	A research submission with fewer than three runnable code sections loses eight points, the commonest deduction; students ask the AI for three sections and run them in the scratchpad.
29	Learning method	Three frustrations and what to say	Ten wrong answers in a row, “this is not real programming” and fear of the AI each have a reply grounded in something the platform can actually show the student.
30	Reading student work	How to read one student card as a coach	Open a card exactly as a student meets it — read, check, practice — so you can judge its pitch and its minutes without writing a line of code yourself.
31	Reading student work	How to read one contest as a coach	A contest's rule line, its pass mark, its slot in the phase and whether it is required tell you enough to brief it accurately without ever solving it.
32	Selection and fairness	The gate: twelve cards, three contests, research	A phase is twelve cards with practice contests on cards four, eight and twelve plus research scoring sixty or more; tracks without gate content show a banner and never lock.
33	Selection and fairness	Strict pass lines, and credit that never sneaks in	Pass lines are deliberately strict, a required slot accepts only an equally required version of the same challenge from a linked token, and carried credit is always shown.
34	Selection and fairness	Reading /honors: three boards, one picture	The honours screen carries the phase research board, the practice pass board and a phase-progress block covering comprehension checks, the three arenas and per-card practice.
35	Selection and fairness	Fast readers, lone solvers, and telling the family	Cards read in under three seconds, or a lone solver with no reading history, are signals to look closer — and the same trail explains a decision to a parent.
36*	Selection and fairness	Putting it together: choosing who goes	Work a real selection: two close candidates, one lone solver, one unmet required slot and one parent question, turning impressions into a decision you can defend line by line.

* **Checkpoint 3 — Choosing who goes — selection from the data.** Eight situational questions, 8 minutes. Cases include: Two candidates have the same contest score but very different card reading times; A lone solver cleared a hard arena with no reading history behind it; A strong student has ten wrong answers in a row and wants to quit the track; A research submission comes in with one code section and loses eight points.

Phase 4 — Competition week and beyond

#	Strand	Module	Focus
37	Accounts and access	Activation codes: one code, one device	An activation code in the four-block form unlocks the tool sandbox and binds to a single device on the server; it is a different thing from a learn token.
38	Accounts and access	Wrong machine? Tokens move, they are not reissued	A token bound to the wrong machine is re-bound by the organisers to the student's real device and the progress follows; a tier upgrade carries progress too.

#	Strand	Module	Focus
39	Accounts and access	Three false alarms — check before you escalate	Vanished practice progress, an invalid exam token and a closed GPU window each have a known cause: a display window, an out-of-date client, and the clock in Sydney.
40	Competition day	T-7: the week before, machine by machine	Seven days out you upgrade every client, run the environment setup, do a first learn sync, confirm the timezone of any GPU window and confirm which server each token targets.
41	Competition day	On the day: memo is the channel, hands off the code	Students report problems with one verb that attaches its own origin, saves locally first and expects no reply; the coach's other channel is the organisers' line.
42	Competition day	After the results: appeals, stories, next steps	Results are server-authoritative, appeals travel through the national association to the organisers, and students who did not medal have an upgrade path and an ambassador role.
43	Safeguarding and compliance	Consent, images and travel belong to the association	Parental consent, publication of images and results, guardianship and travel paperwork are national-association matters with their own checklist, and the CLI never publishes a real name.
44	Orientation	Three sentences for your principal and parents	Say the pathway, the classroom-management case for a terminal and the privacy position in three sentences you can deliver without notes or slides.
45	Sustainable coaching	L1, L2, L3 — and what L1 actually requires	L1 is twenty hours of self-study, seminar and exam with two attempts; L2 adds a real coaching record; L3 is appointed — and L1 requires finishing a student phase yourself.
46	Sustainable coaching	Naming a school AI Club — the one rule	The name needs one accredited coach and at least one Student Ambassador; otherwise the club is in preparation, and a first-year provisional club has six months to certify its coach.
47	Sustainable coaching	Your coach token is an AI token — use it	Coach tokens carry AI access because a coach is expected to have used the AI, the honours screen and the report verb personally before asking students to rely on them.
48*	Competition day	Putting it together: competition week	Run the whole week: a machine that never pre-warmed, a closed window, a report filed mid-contest, a dead laptop, an appeal and a student who did not medal.

* **Checkpoint 4 — Competition week from T-7 to the results.** Eight situational questions, 8 minutes. Cases include: One machine never ran the environment setup and it is now T-1; A GPU rung answers “window closed” on a Tuesday afternoon lesson; One student's laptop answers “invalid exam token” while the rest are fine; A student finds a broken problem statement mid-contest and wants to report it.

Assessment and completion

During the course. Every module carries a short comprehension check, and each phase closes with an eight-question scenario checkpoint. Checkpoints are formative: they are recorded, they do not lock progress, and a participant may continue regardless of the result.

Final examination. Forty situational questions drawn from a larger pool, ninety minutes, seventy per cent to pass. Two attempts are included; the second attempt opens twenty-four hours after the first is submitted and draws a different set of questions. Scenarios used in the checkpoints are never reused in the examination.

Certification. Participants who pass the examination are certified as an **Accredited AI Coach (Level 1)** for three years and listed in the coach register at ioai.org.au. An accredited coach may establish a campus AI laboratory or club, enter students into national selection, and access the coaching resources and contest calendar for the year.

Recording your hours. This course is designed as a twenty-hour block. Participants are responsible for recording their professional development in accordance with the requirements of their own accrediting authority.

The pathway: scholarships, certification and campus AI laboratories

One funded place in every school. Through AUScholarship, the association is offering one fully funded scholarship place to each of 200 Australian schools, on a national AI talent pathway for secondary students. Further places at each school are available at a subsidised rate. Schools and teachers register at ioai.org.au.

Certification for the teacher. A teacher who completes this course and passes the certification examination is certified as an Accredited AI Coach (Level 1) for three years, and is listed in the coach register at ioai.org.au.

Building a campus AI laboratory. Where a school has both — a scholarship student who has completed the core student course, and a teacher who has completed this professional development and passed the certification examination — the association will invite that student and that teacher to co-found a campus AI laboratory, club or society, with continuing support, contest access and materials from the association. The accredited teacher is what makes the club possible; the student is what makes it live.

About the association

Australian STEM and Robotics Advancement Association Incorporated is a not-for-profit association and the Australian accrediting organisation for three international olympiads in artificial intelligence — the International Olympiad in Artificial Intelligence (IOAI), the International Artificial Intelligence Olympiad (IAIO), and the International Cyber Olympiad in AI (ICOA), which the association founded. It selects, accredits and prepares the Australian national teams.

Students accredited through the association have won medals at international level, and have repeatedly been among the youngest medallists in the field: in competitions open to entrants up to the age of twenty, several of its medallists have been middle-school students who took the podium alongside senior secondary and university-age competitors. That record is the basis of the coaching method taught in this course — it was built by teachers working with ordinary students, not by selecting for prior expertise.

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Professional development is not a nationally recognised vocational qualification.