atomcamp

AI for All:

A Framework for an Elective AI Course for Higher Education

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Overview

This document presents the draft outline for an undergraduate-level "AI for All" course, preferably structured as a **3-credit-hour elective course** (with flexibility to adjust according to university regulations and program structures).

The curriculum has been developed in alignment with the Higher Education Institutions (HEI) of Pakistan guidelines for emerging technologies education and the strategic objectives outlined in the National Artificial Intelligence Policy of Pakistan. The course is designed to strengthen AI literacy across disciplines and to build foundational AI competencies among undergraduate and graduate students nationwide.

This course outline provides comprehensive guidance on course content and delivery, including:

1. *Assessment strategies and an evaluation rubric for AI-based projects and assignments*
2. *A curated list of AI tools accessible within Pakistan to support practical learning and student applications*
3. *Recommended pedagogical approaches and instructional frameworks to ensure effective delivery*
4. *Guidance on faculty preparedness to equip educators with the required competencies to teach AI responsibly and effectively*

A key strength of this course outline is its **flexibility and adaptability.** Universities are encouraged to contextualize and tailor the content to their specific disciplinary needs, linguistic preferences, and institutional structures. The course structure and credit allocation may be adjusted to ensure alignment with institutional academic policies and optimal scheduling, thereby enabling seamless integration into Pakistan's diverse higher education landscape.

About atomcamp

atomcamp is a regional leader in applied artificial intelligence and emerging technology training. atomcamp designs and delivers high-impact bootcamps, workshops, and industry-aligned training programs for learners across the education, government, and private sectors. With international exposure and collaborations in the United Kingdom and the Kingdom of Saudi Arabia, atomcamp brings global best practices into its training design and delivery, enabling the development of high-quality, contextually relevant AI programs.

atomcamp has recently trained 300 university teachers in Pakistan as part of a project sponsored by Meta and delivered in partnership with the Ministry of Information Technology and Telecom and the Higher Education Commission of Pakistan.

Rationale for the course

Drawing upon prior experience in designing and delivering a similar course framework for the Kingdom of Saudi Arabia, atomcamp has now mapped and contextualized the curriculum to align with the standards and requirements of higher education institutions in Pakistan. This adaptation ensures relevance to national academic frameworks, industry needs, and the broader strategic objectives outlined in the National AI policy of Pakistan in all 6 pillars

AI for All Course

Course Pedagogy

This course is designed for Higher Education Institutions in the spirit of accessibility, empowerment, and ethical innovation in mind. A focus on no-code and low-code tools makes AI accessible, enabling students from all disciplines to understand and apply artificial intelligence in real-world contexts. The course will also introduce learners to adaptable and user-friendly **AI tools**, such as Azure AI and Copilot, to demonstrate practical applications of AI and workforce upskilling.

Keeping in mind the **Knowledge, Skills, and Values** highlighted by the National AI Policy and MoITT for this educational level, the pedagogy follows:

- **Adaptive pacing:** Universities can tailor the time allocation and course intensity according to their academic calendars and student needs.
- **Discipline-specific customization:** Content and examples are designed to be relevant across diverse fields, with scope for integration of domain-specific AI applications.
- **Progressive scaffolding**: Concepts move from basic AI understanding to advanced projects.
- **Ethical grounding:** National Guidelines and global best practices are embedded in ethics-related modules.

Eligibility Criteria

The AI for All Course is designed to be inclusive and accessible, ensuring wide participation from students across Pakistani universities. The program welcomes:

- Undergraduate or graduate students at recognized universities in Pakistan
- Open to all fields of study
- No prior coding or AI experience required
- Basic computer skills and access to a laptop with internet
- Commitment to attend sessions and complete the final project

Program Duration

The AI for All Course is a 45-hour, in-person training program spread across four months, tailored to fit within the academic calendar of universities.

- Total length: **4 months**
- The total contact hours for the course are preferably set at **45 hours** (equivalent to 3 credit hours per week); *however, this can be adjusted based on the specific requirements of each university.*
- Weekly schedule: **1 in-person session** per week (3 hours each)

This steady pace ensures consistent learning without overwhelming students, allowing them to absorb concepts and apply skills progressively.

AI Foundation for All Backgrounds

All students, regardless of their academic or technical background, will begin with a **unified foundational module** to establish a shared understanding of artificial intelligence.

- Develop an intuitive understanding of how AI functions across common systems and tools.
- Learners will be equipped with the knowledge to both apply and implement AI tools to drive meaningful outcomes.

Discipline-Specific AI Applications and Ethical Contextualization

Following the foundational module, students will engage with AI tools and concepts tailored to their academic field, ensuring contextual relevance and ethical application.

- Each discipline explores practical use cases (e.g., diagnostic tools in health, predictive models in law, generative tools in media).
- Ethical reflection is embedded throughout to guide responsible and field-specific AI adoption. **Language: English (with Urdu facilitation available as needed)**
- Learning Approach: A mix of interactive lectures, guided hands-on labs, group activities, and project-based learning

Inclusion and Differentiation

The curriculum is designed to accommodate diverse learner needs by ensuring accessibility, flexibility, and language support.

- Differentiated resources and optional modules will support both struggling and advanced learners.

Guiding Educational and Ethical Frameworks For Effective Knowledge Transfer

To ensure effective content delivery and align with the National AI Policy, MoITT and HEC Framework, faculty are encouraged to adopt the following educational frameworks. These approaches support robust, ethical, and impactful AI learning while fostering student engagement and professional development.

Framework	Purpose	Application in Course
TPACK (Technological Pedagogical Content Knowledge)	Integrate technology meaningfully without losing subject rigor	Helps faculty blend AI tools into their existing teaching practices while maintaining disciplinary depth
ADDIE Model (Analysis, Design, Development, Implementation, and Evaluation)	Progressively transform teaching with technology	Guides faculty in evaluating and designing lesson plans where AI tools move from basic support to enabling entirely new learning experiences
Bloom's Taxonomy	Structure learning outcomes from basic to higher-order thinking	Supports outcome-based teaching by aligning AI-infused assessments and projects with cognitive skill levels (e.g., analyze, evaluate, create)
National AI policies	Align AI use with ethical and national priorities	Embedded in discussions, national priorities, and Safe AI Ecosystems to ensure AI use is inclusive, transparent, and aligned with the national policies

AI Tools Available in Pakistan for Student Projects and Applications *(but not limited to)*

Tool Name	Primary Use Case	Description
LLMS (ChatGPT, Claude, Gemini etc)	Content generation and concept explanation	A generative AI tool used for drafting content, explaining concepts, generating examples, and assisting in structured academic writing.
n8n	Open-source workflow automation	A low-code automation platform that enables users to connect AI models and external services for multi-step workflows and integrations.
Make.com	Visual automation workflows	A no-code automation platform that connects applications and AI services to create structured, trigger-based workflows.
Microsoft Copilot	Productivity and workflow integration	An AI assistant integrated into Microsoft 365 applications to support document drafting, data analysis, presentations, and automation.
Google AI Studio	Prototyping and prompt-based experimentation	A development environment for experimenting with AI models, structured outputs, and lightweight application prototyping.
Copilot Studio	Agent development and workflow automation	A platform for building AI agents that integrate with Microsoft tools to automate structured processes and decision workflows.
Canva AI	Visual content generation	AI-supported design tool for creating presentations, infographics, and visual learning materials.
Perplexity AI	Research and source-supported querying	An AI-powered research assistant that provides responses with cited sources to support academic inquiry.
Power Automate	Workflow automation	A Microsoft tool used to automate repetitive tasks and integrate AI outputs into structured workflows.

Ethical Reasoning and Critical Thinking

Students will be equipped to critically assess the implications of AI use and navigate ethical challenges across various contexts.

- Core focus areas include algorithmic bias, privacy, surveillance, and responsible AI usage.
- *Emphasis is placed on developing discernment between effective AI support and over-reliance, fostering independent judgment.*

Teaching AI in Compliance with University Policies

The successful rollout of this curriculum depends on alignment with *institutional policies and faculty readiness* to teach AI effectively across disciplines. Faculty will be trained to deliver foundational and discipline-specific content, integrate ethical discussions, and use real-world AI applications relevant to their fields. The curriculum will be adapted to fit within existing academic structures while addressing logistical and policy-related requirements for implementation.

- University teachers/trainers will focus on pedagogy, tool usage, and embedding use cases tailored to each department.
- Adoption will follow university policies, considering necessary approvals, IT support, and curriculum integration timelines.

Learning Outcomes by Levels

Aligned with National AI Policies Pillar 1,2 and 4, students will be capable of the following after each level:

Level 1: Basic (Weeks 1–5)

01 By the end of this phase, students will be able to:

- Explain foundational AI concepts, including Machine Learning (ML), Natural Language Processing (NLP), and Generative AI, in simple terms.
- Identify real-life examples of AI applications in Pakistan (e.g., logistics, tourism, public services).
- Use no-code tools (e.g., Teachable Machine, LLMs, Genspark) to complete basic AI tasks like text summarization or image classification.
- Students will understand Prompt Engineering and evaluate ethical issues in AI, including bias and fairness, supported by real-world examples and national ethical AI initiatives.

Level 2: Intermediate (Weeks 6–11)

02 By the end of this phase, students will be able to:

- Create structured AI workflows using drag-and-drop automation tools (e.g., Zapier, Make).
- Use generative AI tools (e.g., Poe, Notion AI, Copy.ai) to generate visuals, text, and marketing copy for practical use cases.
- Analyze and refine outputs from LLM-powered tools for tasks like CV building, content writing, and summarization.
- Develop prototypes of AI-based public service or community tools relevant to the national and global context.
- Use AI for specific and novel contexts.

Level 3: Advanced (Weeks 12–16)

03 By the end of this phase, students will be able to:

- Design and present a working no-code AI solution that solves a real-world problem aligned with National AI Policies Pillar 3,5 and 6
- Critically assess AI tools and outputs for bias, hallucinations, or misuse using ethical principles.
- Demonstrate collaborative skills by giving and receiving structured peer feedback on AI prototypes.
- Reflect on their personal AI learning journey and map out further tools and domains for skill development.
- Uphold academic and ethical code of AI profession.
- Use critical and cognitive thinking to fuel innovation in real-world.

Proposed Curriculum

Week	Session	Focus	Details & Activities
Level 1- Basics: Foundations & Fundamentals			
1	Introduction to AI & No-Code Tools	Basics of AI, Machine Learning, and Generative AI	- Overview of AI concepts: Machine Learning, NLP, LLM, CV, Generative AI - AI's impact in daily life and industries like healthcare, education, and retail - Understanding LLMs and fundamentals of prompt engineering -Pakistan's National AI Policy
2	Creating AI-Powered Chatbots	Chatbot Creation, Natural Language Processing (NLP)	- Introduction to chatbots and their uses in business and customer support - Basic NLP and how chatbots process language - Build Gems on Gemini as specialized chats.
3	AI Ethics and Responsible Use	Ethical Considerations in AI Development	- Discussing biases in AI, fairness, and transparency - Case studies: How AI models can be biased or fail in real-world scenarios
4	No-Code Machine Learning (ML) Basics	Training AI Models without Code	- Introduction to machine learning concepts like classification, regression - Build a machine learning model without code on Julius AI or other such platforms - Training a model to classify images or text using Teachable Machine
5	Text Analysis with LLMs	Sentiment Analysis, Text Classification	- Text analysis with any LLM - Use cases for text analysis discipline-specific: customer reviews, social media posts, or literature review - Carry out a systematic review of any topic

Level 2- Intermediate: Applications & Use Cases			
6	Visual AI Applications : Image Recognition	AI in Image Recognition, Object Detection	- Introduction to image recognition and AI's ability to classify visual data - Create an image classification model to identify objects in images - Implement discipline-specific use cases
7	Automating Workflows with AI	Workflow Automation, Task Integration	- Utilize AI tools to automate repetitive tasks and connect various software solutions - Build workflow automation systems using Power Automate that trigger notifications (such as emails) based on defined actions -Using ChatGPT or Claude to draft responses, summarize reports.
8	Introduction to Generative AI Tools	Text Generation, Language Models	- Explore generative AI: How Co-pilot generate text - Build a model to generate text for marketing campaigns or news articles - Application of generative AI in content creation
9	AI for Social Media Content Creation	Content Generation, Optimization	- Use AI tools to generate engaging social media content - Hands-on practice to create AI-generated posts in and optimize them for engagement.
10	AI for Customer Feedback and Analysis	Sentiment Analysis, Customer Experience	- Dive into AI tools that analyze customer feedback, reviews, or survey data - Build a tool to analyze customer sentiment on products or services or analyze survey data - Application of feedback data to improve customer service
11	Voice and Audio Recognition with AI	Speech-to-Text, Audio Analytics	- Introduction to voice recognition and speech-to-text AI - Practical: Build tools to transcribe audio or video content into text - Hands-on exercise using audio recognition for transcription

Level 3- Advanced: Projects, Ethics & Impact			
12	Building AI Assistants for Daily Use	Task Automation, Chatbots as Assistants	- AI assistants and their roles in productivity and task automation - Understand the difference between chatbots and AI assistants - Build a personal assistant to schedule meetings or reminders using co-pilot assistant.
13	Advanced AI Agents for Complex Queries	Multilingual Chatbots,AI Agents Advanced NLP	- Implementing a AI Agents that can handle more complex queries and conversation threads using N8N. - Build a multilingual chatbot for customer support that can respond in English and other languages
14	AI for Social Good	AI in Sustainability, Accessibility	- Explore how AI can contribute to social good in different industries: healthcare, sustainability, and education - Build a tool to help with accessibility, like an AI-powered captioning system for videos or text-to-speech for the visually impaired
15	Capstone Project Planning	Final Project Roadmap, Tool Selection	- Define a real-world problem to solve using AI and no-code tools - Define a real-world problem to solve using AI and no-code tools, progressing from easy to complex challenges at a self-paced format under expert mentorship.
16	Capstone Project Showcase & Reflection	Final Presentations, Feedback	- Students present their final projects, showcasing the AI tools they used - Develop a detailed project digital portfolios, selecting appropriate tools and methodologies tailored to discipline-specific needs, enabling practical, iterative learning aligned with individual or institutional requirements.

Guidelines for Effective Course Delivery

Rethinking Assessment Approaches

Assessments should move beyond traditional written exams to include a variety of formats that better reflect real-world applications and foster deeper learning. Incorporating **viva-based evaluations, project work, and presentations allows learners to engage actively, think critically, and articulate their understanding in meaningful ways.** These methods not only encourage participation but also develop communication, problem-solving, and collaboration skills essential for today's learners.

Bridging Theory and Practice with atomcamp

To make assessments more relevant, they should center on real-world issues across diverse industries, giving learners a chance to apply their knowledge to practical contexts. atomcamp plays a crucial role in bridging this gap, helping learners connect theoretical concepts with real-life problem-solving. Through its structured programs and hands-on approach, atomcamp both complements and supplements AI learning, ensuring that learners are equipped not just with academic understanding, but also with the practical experience necessary to thrive in evolving professional landscapes.

Assessment Strategies

In recognition of rapid advancements in AI and changes in professional expectations, this course adopts a modern, future-focused assessment strategy. Traditional written exams have been replaced with approaches that emphasize authentic engagement, practical skills, and collaborative problem-solving—preparing students for real-world AI applications.

Assessment Method	Weight/Role	Description
Project-Based Work	Major Component	Real-world project design, implementation, and reflection
Viva (Oral Exam)	Key Evaluation	Testing understanding, reasoning, and communication skills
Hands-On Learning	Ongoing	Regular assignments demonstrating tool mastery
Pitch Decks/Presentations	Showcase	Solution pitching to evaluators, simulating industry scenarios
Case Studies/Research	Optional/Enrichment	In-depth analysis and reporting on practical or emerging AI topics

Assessment Rubric

The assessment rubric provided is designed to be adaptable and can be applied according to each university's specific requirements. However, atomcamp recommends that the following five criteria be used to evaluate any AI-based capstone project, assignment, pitch decks, or solutions where:

- **Level 1: Unsatisfactory (Fail)**
- **Level 2: Developing (Struggling)**
- **Level 3: Proficient (Pass/Good)**

Criterion	Level 1: Unsatisfactory	Level 2: Struggling	Level 3: Proficient
Problem Identification	Problem lacks clarity, focus, or relevance (e.g., vague description of AI without defined user need)	Problem is clear and relevant (e.g., creating a chatbot for general customer support)	Problem is extremely clear, relevant, and actionable (e.g., developing an AI assistant to help visually impaired users navigate public spaces)
AI Solution Design/Innovation	Limited innovation; AI method is basic or unclear (e.g., rule-based responses without learning or adaptation)	Suitable AI methods showing some originality (e.g., implementing standard chatbot flows with minor customization)	Highly innovative, appropriate, and well-justified AI use (e.g., using advanced NLP with sentiment analysis tailored for Pakistani context
Technical Implementation	Implementation incomplete or mostly non-functional (e.g., prototype with major bugs or missing core functionalities)	Implementation is functional with minor limitations (e.g., chatbot that works but has occasional errors or limited features)	Fully functional, thorough, and error-free implementation (e.g., a working multi-modal AI assistant with seamless integration of speech and text inputs)
Practical Application/Impact	Unclear or limited real-world application (e.g., theoretical project without practical deployment or use case)	Potential for real-world application (e.g., prototype chatbot that could be extended for business use)	Strong real-world application and demonstrated impact (e.g., deployed AI solution improving accessibility for users with disabilities)
AI Ethics and Security	Ethical considerations and security are minimal or overlooked (e.g., no attention to data privacy or ethical risks)	Addresses key ethical concerns and incorporates basic security practices (e.g., uses anonymized data but limited discussion of bias)	Demonstrates thorough consideration of ethical implications and robust security measures (e.g., incorporates data privacy, bias mitigation, and secure user authentication)

Delivery Format

The course is designed to be delivered through **multiple flexible formats** to accommodate diverse learning needs and institutional preferences, including:

- **Synchronous (live online or in-person)** sessions for real-time interaction and engagement
- **Asynchronous learning,** allowing students to access materials and complete activities at their own pace
- **Hybrid models,** combining face-to-face and online instruction to leverage the advantages of both
- **Blended learning approaches,** integrating various modalities for a tailored learning experience

This flexibility ensures that universities can select the delivery format best suited to their infrastructure, student demographics, and academic calendars, while maintaining consistent learning outcomes and quality.

Capstone Project and Showcase

- In the last two weeks, students will work in teams to design and present a practical AI-based solution addressing a real-world problem
- Students will be able to showcase their AI projects and solutions to peers and faculty by the end of this course.

Faculty Preparedness Strategy for AI Course Delivery

To ensure effective delivery of the AI course, faculty preparedness focuses on equipping instructors with the knowledge, skills, and resources needed for teaching with AI tools and modern pedagogies.

- **Orientation, Training & Pedagogical Support:** Conduct workshops and provide training on the course structure project-based learning, blended instruction, and assessment methods such as viva and hands-on assignments.
- **Ongoing Collaboration & Resource Sharing:** Establish faculty learning communities and mentorship programs for peer support, sharing of best practices, and access to up-to-date AI teaching materials, case studies, and industry trends.
- **Continuous Feedback & Improvement:** Collect regular feedback from faculty and students to refine course content, teaching strategies, and adaptation to emerging AI developments.
- **Technical & Institutional Support:** Ensure faculty have access to technical assistance, necessary IT infrastructure, and institutional backing to effectively utilize AI tools and deliver both in-person and remote learning.

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