EAC Graduate Attributes 2024- What's New

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Outline of Presentation

- Key Changes to Graduate Attributes - EAC 2024 Standard
- Graduate Attributes – EAC 2020 versus 2024 Standard
- Knowledge Profile – EAC 2020 versus 2024 Standard
- Q&A

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Graduate Attributes – EAC 2020 vs EAC 2024

Key Changes

- Alignment to IEA GAPC 2021- Version 4
- 12 to 11 Graduate Attributes
- Combining “The Engineer and Society” and “Environment and Sustainability,” under the heading “The Engineer and the World,”
- Highlight Critical thinking, innovation, emerging technologies, and lifelong learning requirements .
- Emphasis on Knowledge and awareness of ethics, diversity, inclusion, UN SDG

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Definition – EAC 2020 vs EAC 2024

2020

Programme Outcomes describe what students are expected to know and be able to perform or attain by the time of graduation. These relate to the skills, knowledge, and behaviour that students acquire through the programme.

2024

Programme Outcomes (PO) are statements that describe what students are expected to know and be able to perform or attain by the time of graduation. These relate to the skills, knowledge, and behaviour that students acquire through the programme.

Graduate Attributes – EAC 2020 vs EAC 2024

PO	EAC 2020	EAC 2024
PO1	**Engineering Knowledge** - Apply knowledge of mathematics, natural science, engineering fundamentals and an engineering specialisation as specified in WK1 to WK4 respectively to the solution of complex engineering problems;	**Engineering Knowledge** - Apply knowledge of mathematics, natural science, computing and engineering fundamentals, and an engineering specialization as specified in WK1 to WK4 respectively to develop solutions to complex engineering problems
PO2	**Problem Analysis** - Identify, formulate, conduct research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences (WK1 to WK4);	**Problem Analysis** - Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences with holistic considerations for sustainable development (WK1 to WK4)

Graduate Attributes – EAC 2020 vs EAC 2024

PO	EAC 2020	EAC 2024
PO3	**Design/Development of Solutions** - Design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations (WK5);	**Design/Development of Solutions** - Design creative solutions for complex engineering problems and design systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required (WK5);
PO4	**Investigation** - Conduct investigation of complex engineering problems using research-based knowledge (WK8) and research methods, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions;	**Investigation** - Conduct investigation of complex engineering problems using research methods including research-based knowledge, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions (WK8);

PO	EAC 2020		EAC 2024
PO5	**Modern Tool Usage** - Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems, with an understanding of the limitations (WK6);	PO5	**Tool Usage** - Create, select and apply, and recognize limitation of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems, (WK2 and WK6);
PO6	**The Engineer and Society** - Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solutions to complex engineering problems (WK7);	PO6	**The Engineer and the World** - Analyze and evaluate sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving complex engineering problems (WK1,WK5,and WK7)
PO7	**Environment and Sustainability** - Understand and evaluate the sustainability and impact of professional engineering work in the solutions of complex engineering problems in societal and environmental contexts. (WK7);		

Graduate Attributes – EAC 2020 vs EAC 2024

PO	EAC 2020	No.	EAC 2024
PO8	**Ethics** - Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice (WK7);	PO7	**Ethics** - Apply ethical principles and commit to professional ethics and norms of engineering practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion (WK9);
PO9	**Individual and Team Work** - Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings;	PO8	**Individual and Collaborative Team Work** - Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multidisciplinary, face-to-face, remote and distributed settings (WK9);

Graduate Attributes – EAC 2020 vs EAC 2024

PO	EAC 2020		EAC 2024
PO10	**Communication** - Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions;	PO9	**Communication** - Communicate effectively and inclusively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences;
PO11	**Project Management and Finance** - Demonstrate knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, to manage projects in multidisciplinary environments;	PO10	**Project Management and Finance** - Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects in multidisciplinary environments;

Graduate Attributes – EAC 2020 vs EAC 2024

PO	EAC 2020	No.	EAC 2024
PO12	**Life Long Learning** - Recognise the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.	PO11	**Life Long Learning** - Recognise the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change (WK8).

Knowledge Profile– EAC 2020 vs EAC 2024

Key Changes

- Alignment to IEA GAPC 2021- Version 4
- Revision of Knowledge Profile in terms of enhancement, name and number .
- The breadth required of engineering education has been widened to emphasize digital literacy, data analysis, knowledge of relevant social sciences and UNSDG.

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Knowledge Profile– EAC 2020 vs EAC 2024

No.	EAC 2020	EAC 2024
	Knowledge Profile (WK)	**Knowledge and Attitude Profile (WK)**
WK1	A systematic, theory-based understanding of the **natural sciences** applicable to the discipline.	A systematic, theory-based understanding of the **natural sciences** applicable to the discipline and awareness of relevant **social sciences**
WK2	Conceptually-based **mathematics**, numerical analysis, statistics and formal aspects of computer and information science to support analysis and modelling applicable to the discipline.	Conceptually-based mathematics, numerical analysis, data analysis, statistics and formal aspects of computer and information science to support detailed analysis and modelling applicable to the discipline.
WK3	A systematic, theory-based formulation of **engineering fundamentals** required in the engineering discipline.	A systematic, theory-based formulation of **engineering fundamentals** required in the engineering discipline.

No.	EAC 2020	EAC 2024
WK4	Engineering **specialist knowledge** that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the engineering discipline; much is at the forefront of the discipline.	Engineering **specialist knowledge** that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the engineering discipline; much is at the forefront of the discipline.
WK5	Knowledge that supports **engineering design** in a practice area.	Knowledge, including efficient resource use, environmental impacts, whole-life cost, re-use of resources, net zero carbon, and similar concepts, that supports **engineering design and operations** in a practice area.
WK6	Knowledge of **engineering practice** (technology) in the practice areas in the engineering discipline.	Knowledge of **engineering practice** (technology) in the practice areas in the engineering discipline.

No.	EAC 2020	EAC 2024
WK7	**Comprehension of** the role of engineering in society and identified issues in engineering practice in the discipline: ethics and the professional responsibility of an engineer to public safety; the impacts of engineering activity: economic, social, cultural, environmental and sustainability.	**Knowledge of** the role of engineering in society and identified issues in engineering practice in the discipline, such as the professional responsibility of an engineer to public safety and sustainable development* *Represented by the 17 UN Sustainable Development Goals (UN-SDG)
WK8	Engagement with selected knowledge in the **research literature** of the discipline.	Engagement with selected knowledge in the current **research literature** of the discipline, awareness of the power of critical thinking and creative approaches to evaluate emerging issues
WK9		**Ethics, inclusive behavior and conduct.** Knowledge of professional ethics, responsibilities, and norms of engineering practice. Awareness of the need for diversity by reason of ethnicity, gender, age, physical ability etc. with mutual understanding and respect, and of inclusive attitudes.

THANK YOU

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