Preparation Guide

Edition 202503

Content

1. Overview 4
2. Exam requirements 7
3. Levels of Knowledge / SFIA Levels 14
4. e-CF mapping 15
5. Literature 16

1. Overview

EXIN BCS Generative Artificial Intelligence Award (AIGAIA.EN)

Scope

EXIN BCS Generative Artificial Intelligence Award confirms that the professional understands how generative artificial intelligence (AI) works and how to use it.

This certification includes the following topics:

- What is generative AI?
- How generative AI works
- Prompting generative AI
- Validating and checking the output
- Ethical and legal concerns

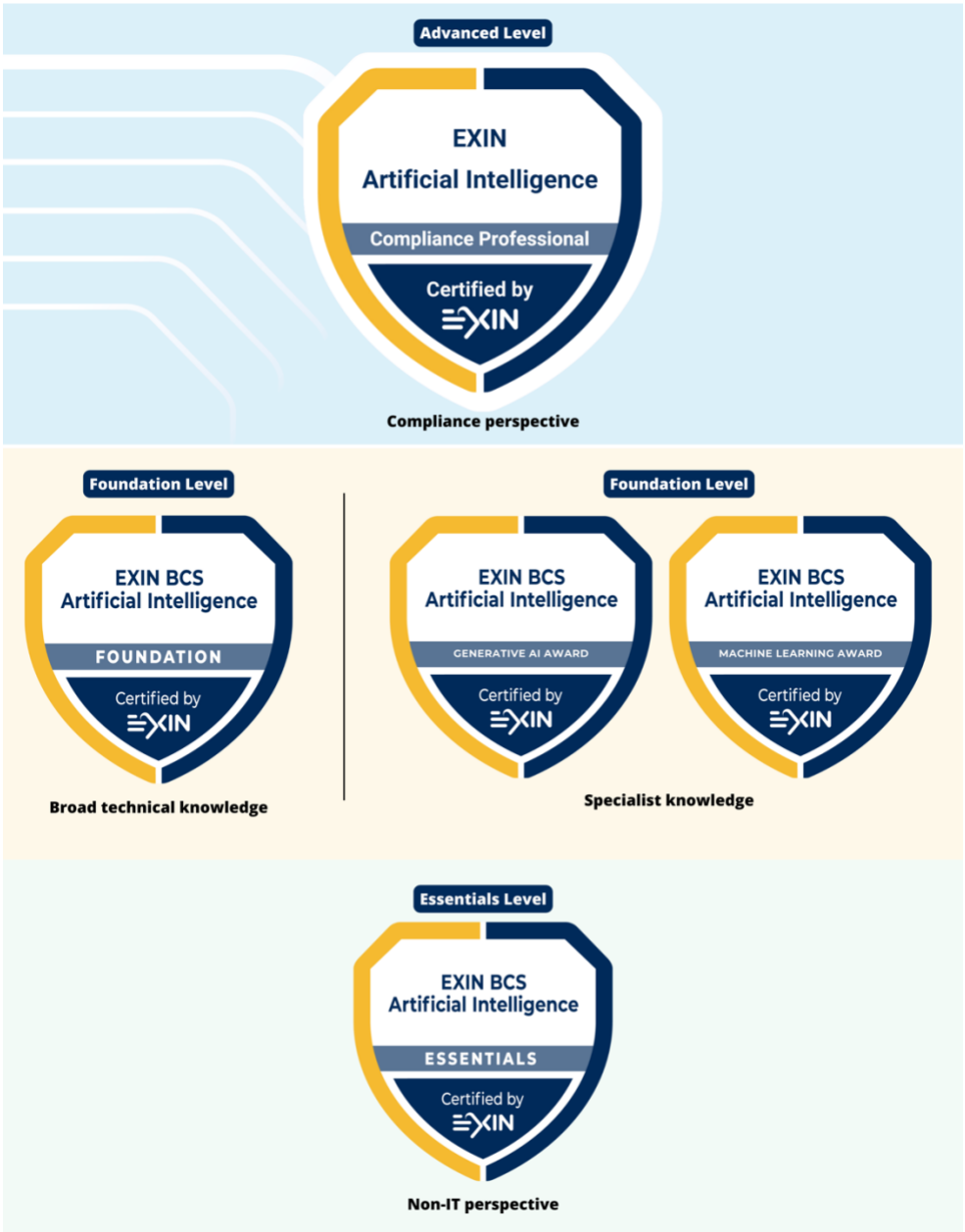
Summary

Generative AI is rapidly becoming one of the most exciting and influential technologies today. It can create realistic digital art, write sophisticated text, and enhance various business processes. Generative AI represents a major shift in organizations: how they operate, interact with customers, and develop new products and services. As more organizations adopt AI solutions, understanding how generative AI works and how to use it, is essential for individuals and organizations.

The EXIN BCS Generative Artificial Intelligence Award provides a solid introduction to this advanced technology. This certification is an ideal introduction for anybody wishing to understand the basics of using generative AI, its future potential, and the associated ethical and legal concerns.

Context

The EXIN BCS Generative Artificial Intelligence Award certification is part of the EXIN Artificial Intelligence qualification program.



Target group

The EXIN BCS Generative Artificial Intelligence Award certification is suitable for individuals with an interest in exploring the functions and abilities of generative AI, and the implications of its use.

Roles with a particular interest may be content creators, designers, developers, project managers, product managers, copywriters, chief information officers, change practitioners, business consultants and leaders of people.

Requirements for certification

- Successful completion of the EXIN BCS Generative Artificial Intelligence Award exam.

Examination details

Examination type:	Multiple-choice questions
Number of questions:	20
Pass mark:	65% (13/20 questions)
Open book:	No
Notes:	No
Electronic equipment/aides permitted:	No
Exam duration:	30 minutes

The Rules and Regulations for EXIN's examinations apply to this exam.

Bloom level

The EXIN BCS Generative Artificial Intelligence Award certification tests candidates at Bloom levels 1 and 2 according to Bloom's revised taxonomy:

- Bloom level 1: Remembering – relies on recall of information. Candidates will need to absorb, remember, recognize and recall.
- Bloom level 2: Understanding – a step beyond remembering. Understanding shows that candidates comprehend what is presented and can evaluate how the learning material may be applied in their own environment. This type of questions aims to demonstrate that the candidate is able to organize, compare, interpret and choose the correct description of facts and ideas.

Training

Contact hours

The recommended number of contact hours for this training course is 8. This includes group assignments, exam preparation and short breaks. This number of hours does not include lunch breaks, homework and the exam.

Indication study effort

28 hours (1 ECTS), depending on existing knowledge.

Training organization

You can find a list of our Accredited Training Organizations at www.exin.com.

2. Exam requirements

The exam requirements are specified in the exam specifications. The following table lists the topics of the module (exam requirements) and the subtopics (exam specifications).

Exam requirements	Exam specifications	Weight
1. What is generative AI		**25%**
	1.1 Describe key generative AI terms	10%
	1.2 Describe common uses of generative AI	5%
	1.3 Describe the role of machine learning in generative AI	10%
2. How generative AI works		**25%**
	2.1 Describe the stages of the generative AI process	10%
	2.2 Explain the use of data in generative AI	5%
	2.3 Describe the role of transformers	5%
	2.4 Describe the role of feedback in generative AI	5%
3. Prompting generative AI		**10%**
	3.1 Explain the role of prompts	5%
	3.2 Describe types of prompts and their uses	5%
4. Validating and checking the output		**15%**
	4.1 Describe the need to quality check the output of generative AI	5%
	4.2 Explain methods used to validate the output of generative AI	10%
5. Ethical and legal concerns		**25%**
	5.1 Describe the ethical considerations when developing generative AI	5%
	5.2 Describe the legal and regulatory considerations when developing generative AI	10%
	5.3 Explain how to mitigate against common AI risks	10%
	Total	**100%**

Exam specifications

1 What is generative AI?

The candidate can…

1.1 describe key generative AI terms.

Indicative content

a. Artificial intelligence (AI) – Intelligence demonstrated by machines, in contrast to the natural intelligence displayed by humans and other animals.
b. Generative artificial intelligence – Deep learning models that can generate high-quality text, images and other content based on the data they were trained on.
c. Large language models (LLMs) – Deep learning algorithms that can recognize, summarize, translate, predict, and generate content using very large datasets.
d. Natural language processing (NLP) – The ability of a computer program to understand human language as it is spoken and written.
e. Prompts – The inputs or queries that a user or a program gives to an LLM AI, in order to elicit a specific response from the model.
f. Completion – The output or result generated by AI after processing and understanding the provided prompt.

Guidance

Candidates will be able to recognize and recall the definitions of key generative AI terminology as listed.

1.2 describe common uses of generative AI.

Indicative content

a. For personal or organizational use
b. Respond to queries, improving search
c. Content creation
d. Summarize documents
e. Text to image, image to text
f. Following instructions
g. Writing computer programs

Guidance

Generative AI is used in an enormous variety of tasks in social and work environments with varying levels of success, risk and responsibility.

Candidates should be able to recognize and describe the use of generative AI in contexts such as answering simple text-based questions, creating reports, summarizing large volumes of text, writing accessibility text to describe images or writing code to program a computer.

1.3 describe the role of machine learning in generative AI.

Indicative content

a. Machine learning – The study of computer algorithms that allow computer programs to automatically improve through experience.
b. Deep learning – A multi-layered neural network.
c. Stages of the machine learning process:

- Analyze the problem
- Data selection
- Data pre-processing
- Data visualization
- Select a machine learning model (algorithm)
  - Train the model
  - Test the model
  - Repeat (learning from experience to improve results)
- Review

Guidance

The machine learning process allows us to define the solution based on the problem that has been identified through the process of data selection, pre-processing, visualization and testing of data with specific algorithms.

There is no de facto method within machine learning, learning through experience is vitally important to generative AI, to help improve the quality and relevance of the output. Testing involves creating the correct test data, creating bodies of data to learn from and parameters for what you wish to test.

2 How generative AI works

The candidate can…

2.1 describe the stages of the generative AI process.

Indicative content

a. Testing
b. Training
c. Reinforcement learning
d. Reinforcement learning from human feedback (RLHF)
e. Inferencing

Guidance

Candidates should be able to describe each of the stages of the generative AI process as listed. The model is firstly trained using vast data sets, then tested using controlled, unseen data. Then, reinforcement learning takes place, where AI learns from the perceived quality of its output or response and uses this to improve its output in future. This takes place in RLHF, where human operators pose thousands of prompts to the AI model, checking the response, then 'rewarding' the AI model for correct responses.

Inferencing is when a trained and tested AI model is fed new data, and prompted to generate a response, such as a prediction or recommendation.

2.2 explain the use of data in generative AI.

Indicative content

a. Training data including pre-training data

b. Test data

Guidance

In generative AI, good quality training and testing data is incredibly valuable. The training data is used to train the model, while the testing data is used to evaluate its accuracy.

Training data is used to feed the AI model enormous banks of information, which it then uses to construct a response to a prompt. Pre-training data is the first batch of data which is fed to the model, without any refinement or fine-tuning. Training data is the term used to describe the data used thereafter, which is more focused or specific. The quality of the data used for training has a direct impact on the quality of the generated output.

Test data is unseen data – data which has not been used in any training capacity – which is used to assess the performance and output of the AI model.

2.3 describe the role of transformers.

Indicative content

a. To make predictions

b. Required for long responses

Guidance

Transformers help to provide more accurate predictions about the next most likely word, phrase, sentence, and even paragraphs in response to a prompt. A transformer provides the capability for lengthy responses – running into thousands of words – although those responses might not be accurate.

2.4 describe the role of feedback in generative AI.

Indicative content

a. Supervised fine tuning (SFT)

b. Reinforcement learning from human feedback (RLHF)

Guidance

Candidates should understand the role of both RLHF and SFT in providing feedback on the responses of generative AI. In SFT, the desired response to a prompt is created by a human and this response is used as training data. In RLHF, human operators pose thousands of prompts and carefully check the response, 'rewarding' the chatbot for correct responses.

This is an ongoing process – constant fine tuning. This is why we see constant improvement.

3 Prompting generative AI

The candidate can…

3.1 explain the role of prompts.

Indicative content

a. To request an output

b. Prompt engineering

Guidance

A prompt is the instruction given to the generative AI model by the user. It powers the transformer – which looks at the prompt, at the training data, and at what it is generating at the same time. This is why a slight change to the prompt or how it is worded can affect the output.

Prompt engineering is the art of altering and refining prompts, to reach a desired, or better-quality output.

3.2 describe types of prompts and their uses.

Indicative content

a. Zero-shot, one shot, few shot
b. Character
c. Chain of thought

Guidance

Zero-shot prompts are short, basic prompts with no additional instruction or context. Character prompts are when AI is asked to create the output in a particular tone or style, based on characteristics such as a given character, time period, or geographical location. Chain of thought prompts are more complex problems, which require multi-level reasoning in order to construct a response.

The more examples you include, the better the output.

4 Validating and checking the output

The candidate can…

4.1 describe the need to quality check the output of generative AI.

Indicative content

a. Human verification
b. Fact checking
c. Checking cited sources

Guidance

Generative AI is capable of "hallucinations". This is when an output presents false or misleading information as fact, often the result of an ambiguous prompt. Examples of this are citing false sources, biased information, or false positives.

This creates a need for human fact verification and fact checking, to ensure that any AI generated output which is being used or shared is correct and fit for purpose.

4.2 Explain methods used to validate the output of generative AI.

Indicative content

a. Subject matter experts (SMEs)
b. Reword the prompt to compare output

Guidance

Actions can be taken to assess the validity of generative AI output. Reviews by SMEs can be used to identify errors, bias or false information. Prompt engineering can also be used in validation. By giving the same instruction, worded in a different way, humans can assess if the generated outputs match and are consistent, allowing any discrepancies to be investigated. This method would still require human input.

5 Ethical and legal concerns

The candidate can…

5.1 describe the ethical considerations when developing generative AI.

Indicative content

a. Data sources:
- Malicious
- Commercially sensitive

b. Bias

c. Inaccuracies and false information

Guidance

In the development of generative AI, consideration must be given to the potential ethical concerns of the data being used for training, and the output this creates.

Candidates must consider the sources of data being used for training and testing and their reliability. For example, if data comes from a source with a particular political or moral stance, it is likely to contain bias and false or misleading information. Equally, commercially sensitive or personal data should not be used to train AI, and this could contain information which poses a risk to individuals or organizations if shared.

Using ethically questionable data to train and test AI could lead to poor output, containing bias or false information.

Candidates should be able to identify simple opportunities for AI in an organization, such as an opportunity to automate a process, or minimize the human input into a repetitive task.

5.2 describe the legal and regulatory considerations when developing generative AI.

Indicative content

a. Copyright

b. Plagiarism

c. Data storage and use

d. Data security and privacy

Guidance

Candidates should be aware of both the legal and regulatory items to consider when developing and using generative AI. In developing generative AI, the use and storage of data must be compliant with relevant legislation, such as UK Data Protection Act, UK GDPR, and Privacy and Electronic Communications Regulations (PECR). If working outside of the UK, consideration must be given to the specific legislation relevant to the country of operation. In using AI, candidates should consider the input and output of the AI model, and always check the output for use of copyrighted content. The data used in the prompt should also be considered – as data entered into a generative AI model cannot be guaranteed to be secure. Private, legally protected or commercially sensitive data should not be used in prompts. Organizational guidelines and policies should also be adhered to.

5.3 explain how to mitigate against common AI risks.

Indicative content

a. Reverse search the output
b. Prompt quality
c. Keep humans involved

Guidance

Steps can be taken to minimize the risks presented by generative AI. Candidates should be able to explain and suggest suitable mitigations. Reverse-searching the output of the AI model can be used to identify if the content already exists somewhere online, this can be helpful in identifying copyrighted or plagiarized content. Improving the quality of the prompt input can help to avoid hallucinations and can significantly improve the quality and relevance of the output. Human input throughout the use of generative AI is key to mitigating and minimizing risk, as common sense and expertise can be applied to the prompt, the output and the application or implementation of it.

3. Levels of Knowledge / SFIA Levels

This certification provides candidates with the level of knowledge highlighted within the table, enabling them to develop the skills to operate at the levels of responsibility indicated.

Level	Levels of Knowledge	Levels of Skills and Responsibility (SFIA)
K7		Set strategy, inspire and mobilize
K6	Evaluate	Initiate and influence
K5	Synthesize	Ensure and advise
K4	Analyze	Enable
K3	Apply	Apply
K2	Understand	Assist
K1	Remember	Follow

SFIA Plus

This syllabus has been linked to the SFIA knowledge, skills and work activities required at level 2 and 3 for an individual working in the following subject areas.

DENG2WA0928	Adheres to information handling procedures and follows relevant standards, policies and legislation in handling data.
KSCA8	Knowledge and understanding of the development of intelligent agents, able to mimic cognitive functions, react to stimuli, and improve automatically through experience and the use of data.
BINT2WA0937	Assists in the application of appropriate safeguards to the handling of data and any analysis results.

Further detail around the SFIA Levels can be found at www.bcs.org/levels.

4. e-CF mapping

All e-Competence Framework competences related to the EXIN BCS Generative Artificial Intelligence Award certification can be found below. Also indicated is the level of the competence and whether the competence is covered entirely, partially or superficially. For more information about the e-CF, please visit https://itprofessionalism.org/ or contact EXIN.

e-Competence Level		1	2	3	4	5
A.10.	User Experience					
B.6.	Systems Engineering					
E.3.	Risk Management					

5. Literature

Exam literature

The knowledge required for the exam is covered in the following literature:

A. Mark Pesce
Getting Started with ChatGPT and AI Chatbots: An introduction to generative AI tools
BCS (2023)
ISBN: 978-1780176413

B. Andrew Lowe, Steve Lawless
Artificial Intelligence and Machine Learning Foundations: Learning From Experience
BCS (2024)
ISBN: 978-1780176734

Contact EXIN

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