**Courses to be offered under PGD in Generative AI**

**Course 1. Introduction to Generative AI**

Introduction Generative AI, Generative AI vs Traditional AI, Traditional machine learning methods and Generative AI learning methods. Introduction Generative AI tools and demo. Significance, advantages, disadvantages and future of Generative AI tools.

Python for Generative AI.

Book: Generative Deep Learning

Published: August 6, 2019

Author: [David Foster](https://www.amazon.com/David-Foster/e/B07VKC3VGM/ref=dp_byline_cont_book_1)

Publisher: O'Reilly Media

Book: Introduction to Generative AI

Published: January 30, 2024

Author: Numa Dhamani , Maggie Engler

Publisher: Manning

Book: Hands-On Generative Adversarial Networks with Pytorch 1. X

Published:2019

Author: [John Hany](https://www.google.com.pk/search?hl=en&q=inauthor:%22John+Hany%22&tbm=bks&sa=X&ved=2ahUKEwjUr9CkmJiDAxUnQvEDHWGRDfIQmxMoAHoECB8QAg), [Greg Walters](https://www.google.com.pk/search?hl=en&q=inauthor:%22Greg+Walters%22&tbm=bks&sa=X&ved=2ahUKEwjUr9CkmJiDAxUnQvEDHWGRDfIQmxMoAXoECB8QAw)

Publisher: Packt Publishing

**Course 2. Generative AI to Data Science**

Foundational concepts in Generative AI. Data science fundamentals leading to Generative AI models, Machine and Deep Learning concepts. Generative AI personas: User, Super User, Developer, and Researcher.

Book: Deep Learning

Published: 2016

Author: [Ian Goodfellow](https://www.google.com.pk/search?sca_esv=591779389&hl=en&q=inauthor:%22Ian+Goodfellow%22&tbm=bks), [Yoshua Bengio](https://www.google.com.pk/search?sca_esv=591779389&hl=en&q=inauthor:%22Yoshua+Bengio%22&tbm=bks), [Aaron Courville](https://www.google.com.pk/search?sca_esv=591779389&hl=en&q=inauthor:%22Aaron+Courville%22&tbm=bks)

Publisher: [MIT Press](https://www.google.com.pk/search?hl=en&gbpv=1&dq=Probabilistic+Graphical+Models:+Principles+and+Techniques%22+by+Daphne+Koller+and+Nir+Friedman&printsec=frontcover&q=inpublisher:%22MIT+Press%22&tbm=bks&sa=X&ved=2ahUKEwj1kfThnZiDAxUeQ_EDHS6iBBcQmxMoAHoECCIQAg)

**Course 3. Introduction to Large Language Models**

Natural Language Processing (NLP), foundation models of Natural Language Processing (NLP), Explore large language models (LLM), use cases where they can be utilized, power of Large Language Models (LLMs), popular LLMs like Transformers, BERT, GPT 3.5, PaLM 2 etc. (Selected models may be covered). Practices for training LLMs. Learn models, Key Query Value (KQV) attention, layer normalization, positional encoding, etc.

Book: Natural Language Processing in Action"

Published: April 14, 2019

Author: Hobson Lane, Cole Howard, Hannes Hapke, Hannes Max Hapke

Publisher: [Manning](https://www.google.com.pk/search?hl=en&q=inpublisher:%22Manning%22&tbm=bks&sa=X&ved=2ahUKEwjokfSxq5iDAxWDbPEDHdF-BVkQmxMoAHoECCIQAg)

Book: Speech & Language Processing

Published: September 2000

Author: Dan Jurafsky

Publisher: Pearson Education

**Course 4. Generative Models for Computer Vision**

Introduction Generative AI models for computer vision. Foundation models in computer vision. Explore GI tools Mid Journey, DALLE 2, and any other similar models, Generative AI models applied to audio and videos using Generative AI tools like AudioLM, Gen 2, etc.

Book: Deep Learning for Computer Vision

Published: 2018

Author: [Rajalingappaa Shanmugamani](https://www.google.com.pk/search?hl=en&q=inauthor:%22Rajalingappaa+Shanmugamani%22&tbm=bks&sa=X&ved=2ahUKEwiOvOipoJiDAxWsVfEDHRYaBxIQmxMoAHoECCMQAg)

Publisher: [Packt Publishing](https://www.google.com.pk/search?hl=en&q=inpublisher:%22Packt+Publishing%22&tbm=bks&sa=X&ved=2ahUKEwiOvOipoJiDAxWsVfEDHRYaBxIQmxMoAHoECCQQAg)

Book: Computer Vision

Algorithms and Applications

Published: January 3, 2022

Author: [Richard Szeliski](https://www.google.com.pk/search?hl=en&gbpv=0&q=inauthor:%22Richard+Szeliski%22&tbm=bks&sa=X&ved=2ahUKEwiewZX9_JCDAxVDYPEDHfPKCt8QmxMoAHoECCgQAg)

Publisher: [Springer International Publishing](https://www.google.com.pk/search?hl=en&gbpv=0&q=inpublisher:%22Springer+International+Publishing%22&tbm=bks&sa=X&ved=2ahUKEwiewZX9_JCDAxVDYPEDHfPKCt8QmxMoAHoECCcQAg)

**Course 5. Generative AI in Cloud Computing:**

Core Concepts, overview of cloud-based generative AI (GenAI) services, Introduction AI tools such as Amazon Sage Maker, Google Cloud AI Platform, OpenAI, ChatGPT, IBM Watson, and Microsoft Azure. Introduction to Generative Adversarial Networks (GANs)

Book: Artificial Intelligence

Published: 2005

Author: [Michael Negnevitsky](https://www.google.com.pk/search?hl=en&q=inauthor:%22Michael+Negnevitsky%22&tbm=bks&sa=X&ved=2ahUKEwjSwNCmoZiDAxUySPEDHV6nCU8QmxMoAHoECCQQAg)

Publisher: Addison-Wesley

Book: GANs in Action

Deep Learning with Generative Adversarial Networks

Published: October 7, 2019

Author: [Jakub Langr](https://www.google.com.pk/search?hl=en&q=inauthor:%22Jakub+Langr%22&tbm=bks&sa=X&ved=2ahUKEwiKmsyD85CDAxWrSPEDHWCqBQMQmxMoAHoECBcQAg), [Vladimir Bok](https://www.google.com.pk/search?hl=en&q=inauthor:%22Vladimir+Bok%22&tbm=bks&sa=X&ved=2ahUKEwiKmsyD85CDAxWrSPEDHWCqBQMQmxMoAXoECBcQAw)

Publisher: [Manning](https://www.google.com.pk/search?hl=en&q=inpublisher:%22Manning%22&tbm=bks&sa=X&ved=2ahUKEwiKmsyD85CDAxWrSPEDHWCqBQMQmxMoAHoECA4QAg)

Book: Computational Intelligence

Published: October 22, 2007

Author: [Andries P. Engelbrecht](https://www.google.com.pk/search?hl=en&gbpv=1&dq=Machine+Learning+Yearning%22+by+Andrew+Ng&printsec=frontcover&q=inauthor:%22Andries+P.+Engelbrecht%22&tbm=bks&sa=X&ved=2ahUKEwjFu8-uspiDAxWWSvEDHTT3DiIQmxMoAHoECCQQAg)

Publisher: [Wiley](https://www.google.com.pk/search?hl=en&gbpv=1&dq=Machine+Learning+Yearning%22+by+Andrew+Ng&printsec=frontcover&q=inpublisher:%22Wiley%22&tbm=bks&sa=X&ved=2ahUKEwjFu8-uspiDAxWWSvEDHTT3DiIQmxMoAHoECCMQAg)

**Course 6. Generative AI Foundations on Amazon Web Services (AWS)**

Fundamentals of AWS, Generative AI Foundations on AWS, AWS Principal AI and Machine Learning, pre-train, fine-tune, and deploy state-of-the-art foundation models on AWS. Key techniques, services, and trends in foundation models.

Book: AWS Certified Solutions Architect Study Guide

Published: December 30, 2020

Author: [Ben Piper](https://www.google.com.pk/search?hl=en&gbpv=1&dq=AWS+Certified+Solutions+Architect+Study+Guide%22+by+Ben+Piper,+David+Clinton&printsec=frontcover&q=inauthor:%22Ben+Piper%22&tbm=bks&sa=X&ved=2ahUKEwj925jH9pCDAxVtQ_EDHSUlB78QmxMoAHoECCcQAg), [David Clinton](https://www.google.com.pk/search?hl=en&gbpv=1&dq=AWS+Certified+Solutions+Architect+Study+Guide%22+by+Ben+Piper,+David+Clinton&printsec=frontcover&q=inauthor:%22David+Clinton%22&tbm=bks&sa=X&ved=2ahUKEwj925jH9pCDAxVtQ_EDHSUlB78QmxMoAXoECCcQAw)

Publisher: [Wiley](https://www.google.com.pk/search?hl=en&gbpv=1&dq=AWS+Certified+Solutions+Architect+Study+Guide%22+by+Ben+Piper,+David+Clinton&printsec=frontcover&q=inpublisher:%22Wiley%22&tbm=bks&sa=X&ved=2ahUKEwj925jH9pCDAxVtQ_EDHSUlB78QmxMoAHoECCYQAg)

Book: Generative AI on AWS

Published: November 13, 2023

Author: [Chris Fregly](https://www.google.com.pk/search?hl=en&gbpv=1&dq=Generative+AI+and+Machine+Learning+on+AWS&printsec=frontcover&q=inauthor:%22Chris+Fregly%22&tbm=bks&sa=X&ved=2ahUKEwjkvKqd-JCDAxXXX_EDHdRZC9QQmxMoAHoECCUQAg), [Antje Barth](https://www.google.com.pk/search?hl=en&gbpv=1&dq=Generative+AI+and+Machine+Learning+on+AWS&printsec=frontcover&q=inauthor:%22Antje+Barth%22&tbm=bks&sa=X&ved=2ahUKEwjkvKqd-JCDAxXXX_EDHdRZC9QQmxMoAXoECCUQAw), [Shelbee Eigenbrode](https://www.google.com.pk/search?hl=en&gbpv=1&dq=Generative+AI+and+Machine+Learning+on+AWS&printsec=frontcover&q=inauthor:%22Shelbee+Eigenbrode%22&tbm=bks&sa=X&ved=2ahUKEwjkvKqd-JCDAxXXX_EDHdRZC9QQmxMoAnoECCUQBA)

Publisher: [O'Reilly Media](https://www.google.com.pk/search?hl=en&gbpv=1&dq=Generative+AI+and+Machine+Learning+on+AWS&printsec=frontcover&q=inpublisher:%22O%27Reilly+Media%22&tbm=bks&sa=X&ved=2ahUKEwjkvKqd-JCDAxXXX_EDHdRZC9QQmxMoAHoECCYQAg)

**Note:**

* Five Courses from the above may be offered according to the market demand.
* **Generative AI is new technology and continuously changing market trends, its contents may be changed according to the market need and new enhancements in the technology.**
* **Independent Study Project (0 6 credit hour)**