Program Catalog Page: Applied Natural Language Processing (ANLP)

Program Overview

- **Program Main Code Name:** ANLP

- **Program Code:** ANLP

- **Program Length:** 24 Weeks (6 Months)

- **Total Contact Hours:** 288 Hours

- **Total Credit Hours:** 11.5 Credits

- **Delivery Method:** In-person Live Instructor-Led, Virtual Live Instructor-Led, or 1-on-1 Virtual Mentorship

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Admissions Requirements

Applicants must:

- Hold a high school diploma or GED.

- Be at least 18 years old (Applicants under 18 require parental/legal guardian consent).

- Demonstrate Python programming familiarity.

- Successfully complete the NVIT Admissions Interview and Readiness Assessment.

Program Description

The **Applied Natural Language Processing (ANLP)** program trains students to design, build, and deploy NLP and AI solutions across industries. Students will:

USA

NVIT Global Headquarters
6475 Preston Road, Suite 201
Frisco, TX 75034, USA
Phone: +1 (214) 407-7229
Email: info@nvit.tech

NIGERIA

NVIT Otukpo Campus & X-Lab
6 King David Ave, Off Old Otobi Road
GRA, Benue
Phone: +234-703-078-8746

NVIT Lekki Campus & X-Lab
19b Kenneth Agbakuru Street
Lekki Phase 1, Lagos
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- Process, analyze, and model text and speech data.

- Build real-world applications using LLMs, transformers, and prompt engineering.

- Integrate text, vision, and speech into multimodal systems.

- Implement ethical, explainable, and responsible AI practices.

Graduates will be prepared to:

- Fine-tune and deploy Large Language Models (LLMs).

- Create intelligent assistants, search engines, and summarization systems.

- Solve speech-to-text, RAG, and multimodal AI challenges.

Course Description

Graduates of the program will qualify for roles such as:

- NLP Engineer

- Conversational AI Developer

- Speech Technology Engineer

- Computational Linguist

- AI Research Specialist

Work Settings for Program Graduates

- AI product companies

- Cloud platform providers

- Healthcare, finance, and legal technology sectors

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- NLP consulting and research labs

Instructional Components

Instructional Component	Hours
Live Lectures + Live Proctored Exams	63 Hours
Labs & Projects	120 Hours
On-the-Job Training (OJT) + Capstone Project	105 Hours
Total Contact Hours	**288 Hours**
Total Credit Hours	**11.5 Credits**

Course Outline

Subject #	Subject Title	Lecture Hrs	Lab/Project Hrs	OJT + Capstone Hrs	Contact Hrs	Credit Hrs
ANLP 101	Fundamentals of NLP & Linguistic Processing	6	12	0	18	0.8
ANLP 102	Text Classification & Sentiment Analysis	6	12	0	18	0.8

Subject #	Subject Title	Lecture Hrs	Lab/Project Hrs	OJT + Capstone Hrs	Contact Hrs	Credit Hrs
ANLP 103	Word Embeddings & Topic Modeling	6	12	0	18	0.8
ANLP 104	Transformers, BERT, GPT & LLMs	6	12	0	18	0.8
ANLP 105	Prompt Engineering & LLMOps	6	12	0	18	0.8
ANLP 106	Retrieval-Augmented Generation (RAG) & Vector Databases	6	12	0	18	0.8
ANLP 107	Speech Processing & Real-Time NLP	6	12	0	18	0.8
ANLP 108	Multimodal NLP (Text + Vision + Speech)	9	18	0	27	1.2
ANLP 109	Responsible AI, Bias, and Explainability in NLP	9	18	0	27	1.2

Subject #	Subject Title	Lecture Hrs	Lab/Project Hrs	OJT + Capstone Hrs	Contact Hrs	Credit Hrs
ANLP 110	Capstone Project and On-the-Job Training	3	0	47	50	2.3

Subject Descriptions

ANLP 101 – Fundamentals of NLP & Linguistic Processing

(Weeks 1–2 | Lec 6 Hrs / Lab 12 Hrs / Ext 0 Hrs | 18 Total Hrs | 0.8 Credit Hours)

Students will:

• Understand linguistic structures (tokens, lemmas, POS tags).

• Implement text preprocessing techniques (tokenization, stemming, lemmatization).

• Build basic NLP pipelines for language processing.

Prerequisite: Python programming basics

Tools: NLTK, SpaCy

ANLP 102 – Text Classification & Sentiment Analysis

(Weeks 3–4 | Lec 6 Hrs / Lab 12 Hrs / Ext 0 Hrs | 18 Total Hrs | 0.8 Credit Hours)

Students will:

• Design machine learning models for text classification tasks.

• Implement Naïve Bayes, SVM, and Logistic Regression for NLP.

• Analyze and build sentiment analysis systems.

Prerequisite: ANLP 101 – Fundamentals of NLP & Linguistic Processing

Tools: Scikit-learn, SpaCy

ANLP 103 – Word Embeddings & Topic Modeling

(Weeks 5–6 | Lec 6 Hrs / Lab 12 Hrs / Ext 0 Hrs | 18 Total Hrs | 0.8 Credit Hours)

Students will:

• Generate dense word representations using Word2Vec, GloVe.

• Apply topic modeling algorithms (LDA, NMF) for corpus analysis.

• Visualize and interpret semantic spaces.

Prerequisite: ANLP 102 – Text Classification & Sentiment Analysis

Tools: Gensim, Scikit-learn

ANLP 104 – Transformers, BERT, GPT & LLMs

(Weeks 7–8 | Lec 6 Hrs / Lab 12 Hrs / Ext 0 Hrs | 18 Total Hrs | 0.8 Credit Hours)

Students will:

• Understand Transformer architectures and attention mechanisms.

• Fine-tune BERT and GPT models for classification, Q&A, and summarization.

• Deploy LLMs for basic inference tasks.

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Prerequisite: ANLP 103 – Word Embeddings & Topic Modeling

Tools: Hugging Face Transformers, TensorFlow

ANLP 105 – Prompt Engineering & LLMOps

(Weeks 9–10 | Lec 6 Hrs / Lab 12 Hrs / Ext 0 Hrs | 18 Total Hrs | 0.8 Credit Hours)

Students will:

• Apply prompt engineering techniques (zero-shot, few-shot, chain-of-thought).

• Optimize prompts for better model outputs.

• Learn LLMOps best practices for model maintenance.

Prerequisite: ANLP 104 – Transformers, BERT, GPT & LLMs

Tools: OpenAI API, Hugging Face, LangChain

ANLP 106 – Retrieval-Augmented Generation (RAG) & Vector Databases

(Weeks 11–12 | Lec 6 Hrs / Lab 12 Hrs / Ext 0 Hrs | 18 Total Hrs | 0.8 Credit Hours)

Students will:

• Design Retrieval-Augmented Generation (RAG) pipelines.

• Implement vector databases (FAISS, Pinecone) for retrieval.

• Integrate search and generation workflows.

Prerequisite: ANLP 105 – Prompt Engineering & LLMOps

Tools: FAISS, Chroma, Pinecone

ANLP 107 – Speech Processing & Real-Time NLP

(Weeks 13–14 | Lec 6 Hrs / Lab 12 Hrs / Ext 0 Hrs | 18 Total Hrs | 0.8 Credit Hours)

Students will:

• Build speech-to-text and text-to-speech (TTS) systems.

• Apply real-time transcription using open-source tools.

• Integrate voice AI into NLP applications.

Prerequisite: ANLP 106 – Retrieval-Augmented Generation (RAG) & Vector Databases

Tools: Mozilla DeepSpeech, AssemblyAI API

ANLP 108 – Multimodal NLP (Text + Vision + Speech)

(Weeks 15–17 | Lec 9 Hrs / Lab 18 Hrs / Ext 0 Hrs | 27 Total Hrs | 1.2 Credit Hours)

Students will:

• Combine NLP, vision, and audio modalities in AI systems.

• Work with CLIP models and multimodal datasets.

• Build applications combining image, text, and audio inputs.

Prerequisite: ANLP 107 – Speech Processing & Real-Time NLP

Tools: OpenAI CLIP, Hugging Face Multimodal

ANLP 109 – Responsible AI, Bias, and Explainability in NLP

(Weeks 18–20 | Lec 9 Hrs / Lab 18 Hrs / Ext 0 Hrs | 27 Total Hrs | 1.2 Credit Hours)

Students will:

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• Analyze bias and fairness issues in NLP datasets and models.

• Apply techniques for model explainability (LIME, SHAP).

• Understand AI governance and ethical frameworks.

Prerequisite: ANLP 108 – Multimodal NLP (Text + Vision + Speech)

Tools: LIME, SHAP, What-If Tool (WIT)

ANLP 110 – Capstone Project and On-the-Job Training

(Weeks 21–24 | Lec 3 Hrs / Lab 0 Hrs / OJT + Capstone 47 Hrs | 50 Total Hrs | 2.3 Credit Hours)

Students will:

• Complete a real-world NLP or multimodal AI project.

• Design, document, and deploy a full solution.

• Present final deliverables including business case, demo, and technical report.

Prerequisite: ANLP 109 – Responsible AI, Bias, and Explainability in NLP

Class Schedule:

- **Day Students:** Monday to Wednesday, 9:30 AM – 12:30 PM

- **Afternoon Students:** Monday to Wednesday, 1:30 PM – 4:30 PM

- **Evening Students:** Monday to Wednesday, 6:00 PM – 9:00 PM

- **Weekend Students:** Thursday to Saturday, available in Morning, Afternoon, and Evening shifts.

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- **Virtual Mentorship Students:** 12–24 flexible hours per week.

Day students will attend classes Monday through Wednesday.

Weekend students will attend classes Thursday through Saturday.

A 10-minute break will be taken every instructional hour for all in-person students.

Lunch break for day students is from 12:30 PM to 1:30 PM.

Evening students will not have a meal break but will have a 10-minute break every instructional hour.

Dates School Will Be Closed:

- New Year's Day
- Martin Luther King Day
- Presidents' Day
- Good Friday
- Memorial Day
- Independence Day
- LBJ's Birthday
- Labor Day
- Veteran's Day
- Thanksgiving Day
- Day After Thanksgiving
- Christmas Eve

- Christmas Day
- Day After Christmas

Class Start Dates:

- Classes for all students (Day, Afternoon, Evening, Weekend) begin **May 26, 2025**.
- New classes start approximately every **eight weeks** for in-person students.
- Virtual Mentorship students have rolling admissions with flexible start dates.

Tuition and Fees

Fee Type	Cost
Registration Fee	$50.00
Books and Supplies (estimated)	$600.00
Background Check (if applicable)	$150.00
Tuition (In-person Live Instruction)	$9,599.00
Tuition (Virtual Live Instruction)	$8,599.00
Tuition (1-on-1 Virtual Mentorship)	$10,599.00

Total Program Cost:

- **In-person:** $10,399.00
- **Virtual Live:** $9,399.00

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- **Virtual Mentorship:** $11,399.00

Cost Per Single Subject

Each single subject cost is calculated based on the tuition per contact hour multiplied by the number of contact hours for each subject.

Hourly Tuition Rate (Based on Total Program Cost Divided by 288 Contact Hours):

- **In-Person Live Instruction:** $36.11 per hour

- **Virtual Live Instruction:** $32.63 per hour

- **1-on-1 Virtual Mentorship:** $39.58 per hour

The individual subject costs are as follows:

Subject Code	Subject Title	Contact Hours	In-Person Cost	Virtual Live Cost	Virtual Mentorship Cost
ANLP 101	Fundamentals of NLP & Linguistic Processing	18	$649.98	$587.34	$712.44
ANLP 102	Text Classification & Sentiment Analysis	18	$649.98	$587.34	$712.44
ANLP 103	Word Embeddings & Topic Modeling	18	$649.98	$587.34	$712.44

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Subject Code	Subject Title	Contact Hours	In-Person Cost	Virtual Live Cost	Virtual Mentorship Cost
ANLP 104	Transformers, BERT, GPT & LLMs	18	$649.98	$587.34	$712.44
ANLP 105	Prompt Engineering & LLMOps	18	$649.98	$587.34	$712.44
ANLP 106	Retrieval-Augmented Generation (RAG) & Vector Databases	18	$649.98	$587.34	$712.44
ANLP 107	Speech Processing & Real-Time NLP	18	$649.98	$587.34	$712.44
ANLP 108	Multimodal NLP (Text + Vision + Speech)	27	$974.97	$881.01	$1,068.66
ANLP 109	Responsible AI, Bias, and Explainability in NLP	27	$974.97	$881.01	$1,068.66
ANLP 110	Capstone Project and On-the-Job Training	50	$1,805.50	$1,631.50	$1,979.00