Title: Introduction to Deep Learning.

Objective: This introductory session aims to give students a high-level understanding of deep learning, its fundamental concepts, and its applications.

Duration: Approximately 90 minutes.

Lesson Plan:

1. Introduction (10 minutes)
    a. Welcome and introductions.
    b. Briefly explain the importance and growing popularity of deep learning in various fields.
    c. Outline the agenda for the session.

2. What is Deep Learning? (15 minutes)
    a. Define deep learning and its distinction from traditional machine learning.
    b. Discuss the concept of neural networks as the foundation of deep learning.
    c. Introduce the term "deep" in deep learning, highlighting the multiple layers of neural networks.

3. Neural Networks (30 minutes)
    a. Explain the structure and components of a primary neural network: input layer, hidden layers, and output layer.
    b. Discuss the role of activation functions in neural networks (e.g., sigmoid, ReLU).
    c. Explain the concept of weights and biases in neural networks.
    d. Briefly touch upon backpropagation as the algorithm used for training neural networks.

4. Deep Learning Architectures (20 minutes)
    a. Introduce popular deep learning architectures:
        i. Convolutional Neural Networks (CNN) for image processing tasks.
        ii. Recurrent Neural Networks (RNN) for sequence data processing.
        iii. Generative Adversarial Networks (GAN) for generating new data.
    b. Discuss the unique characteristics and applications of each architecture.

5. Deep Learning Applications (15 minutes)
    a. Highlight various real-world applications of deep learning:
        i. Computer vision: object detection, image classification.
        ii. Natural Language Processing: sentiment analysis, language translation.
        iii. Speech recognition: voice assistants, automatic transcription.
        iv. Healthcare: disease diagnosis, medical image analysis.
        v. Autonomous vehicles: object detection, path planning.
        vi. Recommender systems: personalized recommendations.

    b. Showcase a few examples and success stories to illustrate the potential of deep learning.

6. Tools and Frameworks (10 minutes)
    a. Provide an overview of popular deep learning libraries and frameworks, such as TensorFlow and PyTorch.
    b. Discuss the availability of pre-trained models and the benefits of transfer learning.

7. Conclusion and Resources (10 minutes)
    a. Recap the main concepts covered during the session.
    b. Offer additional resources for further learning, including online courses, tutorials, and research papers.
    c. Encourage students to explore hands-on exercises and projects to deepen their understanding of deep learning.

8. Q&A Session (10 minutes)
    a. Allocate time for students to ask questions and seek clarification on any concepts covered during the session.

Note: The above lesson plan provides a high-level outline for an introductory session on deep learning. The duration of each section can be adjusted based on the available time and the audience's specific needs.