1. Data Preparation: Collect and preprocess your data. This involves cleaning the data, handling missing values, and normalizing or standardizing the features if necessary.
2. Network Architecture: Design your ANN architecture. For regression, a common choice is a feedforward neural network with multiple layers, including an input layer, one or more hidden layers, and an output layer.
3. Activation Function: Select an appropriate activation function for the hidden layers. Popular choices include ReLU (Rectified Linear Unit) or its variants, such as Leaky ReLU or Parametric ReLU.
4. Output Layer: Choose the activation function for the output layer based on your regression problem. Common choices include linear activation for unbounded continuous outputs or sigmoid or tanh activation for bounded outputs.
5. Loss Function: Define a suitable loss function for regression tasks. Mean Squared Error (MSE) is a commonly used loss function for regression problems.
6. Training: Train your ANN using an optimization algorithm like stochastic gradient descent (SGD) or its variants. Adjust the learning rate and batch size to optimize training performance.
7. Evaluation: Evaluate your model's performance using appropriate metrics for regression, such as Mean Absolute Error (MAE) or Root Mean Squared Error (RMSE). Consider using cross-validation or hold-out validation to assess generalization performance.
8. Hyperparameter Tuning: Experiment with different hyperparameters like the number of hidden layers, number of neurons per layer, learning rate, and regularization techniques (e.g., dropout or L2 regularization) to improve your model's performance.
9. Prediction: Once your model is trained and evaluated, use it to make predictions on new, unseen data.
10. Iteration and Improvement: Iterate and refine your model by fine-tuning the architecture, hyperparameters, or data preprocessing techniques based on insights gained during the development process.

Remember, this is a simplified overview, and there are many advanced techniques and considerations to explore. It's always helpful to refer to additional resources, tutorials, or consult with experts in the field to further enhance your understanding and skills.