

▼ Announcements

1. **Slack Channel Created** - Search for #dsml-april-22-core, <https://scaler-co.slack.com/archives/C03C2LTRHQX>
2. **WhatsApp Group** (only urgent+important notifications) - <https://chat.whatsapp.com/CKsPfzTec8eHtHA40XQ005>

Note: Live class Jupyter Notebook will be shared as notebook in Extra Reference Material for a week

Colab Link: https://colab.research.google.com/drive/1g5lx8yxXez5qtJsJU_w5SFh-7DNNpxiu?usp=sharing

Strings Join and Split

```
string = "Ce La Vi"
```

```
string.split(" ")
```

Saved successfully!

```
string = "Ce?La?Vi"
```

```
split_string = string.split("?")
```

```
split_string
```

```
['Ce', 'La', 'Vi']
```

```
" ".join(split_string)
```

```
'Ce La Vi'
```

```
"_".join(split_string)
```

```
'Ce_La_Vi'
```

Advanced Concepts in Functions

```
# Lambda Functions (Anonymous)
```

```
signal = "green"
```

```
"stop" if signal == "green" else "red"
```

```
'stop'
```

```
[x**2 for x in range(5)]
```

```
[0, 1, 4, 9, 16]
```

```
lambda x: 2*x
```

```
<function __main__.<lambda>>
```

```
double = lambda x: 2*x
```

```
double
```

```
<function __main__.<lambda>>
```

```
double(3)
```

```
6
```

Saved successfully!



```
double(3), double_2(3)
```

```
(6, 6)
```

```
(lambda num: (num - 10) * 2 / 4)(20)
```

```
5.0
```

```
f1 = lambda x, y: x+y
```

```
f1(2, 3)
```

```
5
```

```
func = lambda x: return x**2
```

File ["<ipython-input-26-56a8a6b538fe>"](#), line 1

```
func = lambda x: return x**2
```

SyntaxError: invalid syntax

SEARCH STACK OVERFLOW

```
func = lambda x: x**2
```

```
# Higher Order Functions
```

```
# calculates multiple of 3
```

```
nth_multiple_of_3 = lambda n: 3*n
```

```
nth_multiple_of_3(4)
```

```
12
```

```
def nth_multiple(x):  
    return lambda n: x*n # higher order function
```

```
nth_multiple_of_4 = nth_multiple(4)  
nth_multiple_of_4(4)
```

```
16
```

```
nth_multiple_of_5 = nth_multiple(5)  
nth_multiple_of_5(4)
```

Saved successfully!



```
def square(x):  
    return x**2
```

```
def cube(x):  
    return x**3
```

```
funcs = {"square": square, "cube": cube}
```

```
funcs["square"](3)
```

```
9
```

```
x = 2  
for fnc in funcs.keys():  
    print(fnc, funcs[fnc](x))
```

```
square 4  
cube 8
```

```
def fit(model):  
    return model.upper()
```

```
def transform(model):  
    return model.lower()
```

```
def train(func, text, fit = True):
```

```
print(func(text))

train(fit, 'Fitting the model')
train(transform, 'Transforming the model', fit = False)
```

```
FITTING THE MODEL
transforming the model
```

```
# call by object reference
```

```
def modify_content(y):
    y[0] = 999
```

```
x = [1, 2, 3]
print(x)
modify_content(x)
print(x) #?
```

```
[1, 2, 3]
[999, 2, 3]
```

Saved successfully!



```
x = [1, 2, 3]
modify_content(x)
print(x) #?
```

```
[1, 2, 3]
```

```
x = [1, 2, 3]
modify_content([1,2,3])
print(x)
```

```
[1, 2, 3]
```

```
def access(lst, num):
    lst.append(num)
    num -=4
    return num
```

```
lst = [1,2,3]
num = 4
```

```
access(lst, num)
```

```
print(lst, num)
```

```
# Functional Programming
```

```
x = 5
x = 2 * x
x += 1
print(x)
```

```
11
```

```
x = 5
x1 = 2 * x
x2 = x + 1
print(x)
```

```
5
```

```
list1 = [1, 2, 3, 4, 5]
```

```
list2 = []
for element in list1:
```

Saved successfully!



ative programming - showing how it is done

```
[2, 4, 6, 8, 10]
```

```
def twice(x):
    return 2*x
```

```
tuple(map(twice, list1))
```

```
(2, 4, 6, 8, 10)
```

```
tuple(map(lambda x: x*2, list1))
```

```
(2, 4, 6, 8, 10)
```

```
heights = [152, 182, 175, 161, 180, 172, 146]
```

```
# if height is < 150 --> S, 150 < h < 180 --> M, h > 180 --> L
```

```
def get_tshirt_size(height):
    if height < 150:
        return "S"
    elif height > 150 and height <= 180:
        return "M"
    else:
        return "L"
```

```
tuple(map(get_tshirt_size, heights))
```

```
('M', 'L', 'M', 'M', 'M', 'M', 'S')
```

Given a list

```
numbers = [10,96, 24]
```

Select which of the following statements is incorrect:

- A. `list(map(lambda x: x, numbers))`
- B. `map(lambda x: x, numbers)`
- C. `list(map(lambda x: x % 2 == 0, numbers))`
- D. `list(map(lambda x: x, Numbers))`

```
# filter
```

```
tuple(filter(lambda x:x%2==0, list1))
```

```
(2, 4)
```

Saved successfully!



```
# reduce - not an inbuilt function
```

```
import functools
```

```
functools.reduce()
```

```
list1 = [1, 2, 3, 4, 5]
```

```
sum(list1)
```

```
15
```

```
functools.reduce(lambda x,y:x+y, list1)
```

```
15
```

```
A = list(range(1,11))
```

```
B = reversed(A)
```

```
print(functools.reduce(lambda x,y:x*y,A)==functools.reduce(lambda a,b:a*b,B))
```

```
True
```

```
inches = [1, 2, 3, 4.5, -1, 0]
```

```
# remove invalid values
# inches to cms 2.54
# total length of cloth required

# map, reduce, filter

inches = [1, 2, 3, 4.5, -1, 0]
valid_inches = list(filter(lambda x: x>0, inches))
valid_inches

[1, 2, 3, 4.5]

valid_cms = list(map(lambda x: x*2.54, valid_inches))
valid_cms

[2.54, 5.08, 7.62, 11.43]

functools.reduce(lambda x, y: x+y, valid_cms)

26.67
```

Saved successfully!



coordinates
coordinates

```
y = [6, 7, 8, 9, 10] # list of y coordinates
list(zip(x, y))

[(1, 6), (2, 7), (3, 8), (4, 9), (5, 10)]

x = [1, 2, 3, 4, 5] # list of x coordinates
y = [1, 4, 16]
list(zip(x, y))

[(1, 1), (2, 4), (3, 16)]

list1 = [1,2,3,4,5]
list2 = list('Excelsior')

zipper = list(zip(list1, list2))

print(zipper)


[(1, 'E'), (2, 'x'), (3, 'c'), (4, 'e'), (5, 'l')]
```

▼ Curriculum

Data Track - Common Core	42.0	14.0	3.5	
Foundations of Data Science and ML	42.0	14.0	3.5	
Python for DSML	8.0	2.7	0.7	Prior knowledge of Python is not required.
Numpy, Pandas	5.0			Numpy and Pandas are going to be your air and water as a Data Scientist and ML Engineer. We will teach you how to use these tools to solve difficult business problems.
Matplotlib and Seaborn	2.0			
Regular Expressions/Pattern Matching	1.0			
Git and Github (Recorded Session)	0.0			
Probability & Statistics	6.0	2.0	0.5	Essential tools like Git will be covered so that you don't struggle on the job.
Probability Theory and Descriptive Statistics Combinatorics, Marginal Probability, Joint Probability, Conditional Probability, Bayes Theorem, Mean, Median, Mode, Percentile, IQR, Outlier	2.0			From the Casinos of Las Vegas to the Emergency Call Center - Learn and experience Probability and Statistics in a new way!
Probability Distributions PDF, PMF, CDF, PPF, Uniform, Gaussian, Bernoulli, Multinomial, Normal Distribution, Poisson, Exponential, Geometric, Log-normal distribution, Pareto/Power Law Distribution	3.0			
Inferential Statistics Confidence Interval Estimates, CLT	1.0			
Maths Refresher for DSML	4.0	1.3	0.3	How many flights take off from the Mumbai airport each day? Learn the techniques to estimate and verify such solutions. Also get a quick refresher of High School maths to help you succeed in Data Science and Data Analyst careers.
Coordinate Geometry Point, Lines, Slope, Intercept	1.0			
Linear Algebra Vector and Matrices, Unit Vector, Dot product, Projections, Cosine Similarity, Determinant, Transpose, System of Equations	1.0			
Linear Programming Optimisation Basics	1.0			
Estimation Problems	1.0			
Data Acquisition & Unstructured Data	8.0	2.7	0.6	Not all data is created equal. Learn how to get data from various sources - cloud or local. Also learn to work with data in different formats, structured or unstructured - Tables, Files, Images, Videos, Audio, Text.
Databases and SQL - Relational, Non-relational, ER diagrams, SQL Commands, Aggregate Functions, Joins, SubQueries, Normalisation, Scaling patterns, ACID, Dask SQL, Cloud SQL (Athena/BigQuery)	5.0			Databases and SQL are an integral part of a Data Scientist's or ML Engineer's toolkit. Besides just writing queries, also understand how Databases work, what are the different types of databases, what are their limitations, and how to optimize your queries accordingly.
Data from Web API, Scraping, Data Cleaning	1.0			Being able to build a crawler to scrape websites and deploying your web apps will help you ace your career as a Data Scientist and ML Engineer.
Unstructured Data - OpenCV, Image processing, Smoothing, Morphological Operations, NIFTY Text	2.0			
		2.0	0.5	Go beyond the usual tricks and learn the latest advanced techniques used by unicorns to conduct sophisticated experiments and analysis of results. These techniques are usually not covered in other courses and degree programs.
Hypothesis testing, Parametric vs non-parametric tests, Chi-square, Skewness, Kurtosis, Normality test	2.0			
Experiment Design, ANOVA, Simulations, Power of Test, A/B testing, Diff n Diff, Multi-arm bandits	2.0			
EDA, Covariance, Correlation, Pearson, Spearman Rank, Multi-dimensional, Feature Engineering, Column normalisation, Standardisation, Covariance matrix, Missing Values, Outlier treatment	2.0			
Data Visualization with Tableau	3.0	1.0	0.3	Tableau is the predominant tool in the industry for visualization, dashboarding, and reporting. You would need to use this not just as an Analyst, but also as a Data Scientist or ML Engineer.
Introduction to Tableau - Managing Data Sources and Visualizations - Analyzing Data Using Statistical Tools - Creating Basic Charts, Dashboards & Actions - Introduction to Calculations	3.0			
Product, Strategy, Business	7.0	2.3	0.6	The problem statements that you get on-the-job are Business Problems. You need to learn how to break down these business situations, design the correct metrics, and deal with uncertainty. This is what helps you stand out from the crowd and deliver impact!
Metric Design	1.0			
How to crack Product and Strategy Rounds	2.0			
Domain Knowledge - Banking, Finance, Marketing, Social Media, Operations, Healthcare	3.0			

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Data Science and Machine Learning	62.0	20.7	5.2	
Data Science & Machine Learning	30.0	10.0	2.3	We will cover the latest models in Data Science and Machine Learning. You will work on projects built in partnership with top companies . You will get your hands dirty by working with messy and unclear real-world data .
Essential Maths for Machine Learning	4.0	1.3	0.3	A strong foundation in Mathematics is a gift that keeps on giving. We will cover these topics in a fun and engaging way - From Drone delivery to Soccer matches.
Linear Algebra - Vector and Matrices, Dot product, Projections, System of Equations, Matrix Transformation, Eigen Vectors and Values, Orthonormal Basis Vectors, SVD, PCA	2.0			
Coordinate Geometry - Line, Plane, HyperPlane, Half space, Classification using plane	1.0			
Calculus - Functions, Limits, Derivatives, Partial derivatives, Saddle points	1.0			
Supervised Learning	16.0	5.3	1.2	Write the code for major Supervised Learning algorithms from scratch to understand exactly how they work. These are the algorithms that are currently powering some of your favorite apps.
Linear Regression, Gradient Descent, Multicollinearity, VIF, R-square, Heteroscedasticity, Sklearn, Polynomial Regression, Bias-Variance trade-off, Regularisation	4.0			
Logistic Regression, Squashing function, AUC, ROC, Precision-Recall Curve, Confusion matrix, Specificity	2.0			
KNN, Decision Trees, Ensemble learning, Bagging, Boosting, SHAP Values	7.0			
Support Vector Machine	1.0			
Bayesian Machine Learning	2.0			
Unsupervised Learning	5.0	1.7	0.4	Learn the algorithms that companies use for optimizing their sales and marketing campaigns, for detecting fraud, and for understanding complex datasets.
KMeans, Customer Segmentation, Hierarchical, DBSCAN, Anomaly Detection, Local Outlier Factor, Isolation Forest, Dimensionality Reduction, PCA, t-SNE, GMM, Information Theory, Expectation Maximisation	5.0			
Recommender Systems	3.0	1.0	0.2	People who bought that also bought this (Amazon). Jobs you may be interested in (LinkedIn). You might also like House of Cards (Netflix). Top 10 results (Google). Your friend liked this post (Facebook) - Wonder how this happens?
Collaborative/Content filtering, Propensity analysis, Cold start problem	3.0			
Predictive Modeling & Time Series Forecasting	2.0	0.7	0.2	Sometimes you might want to forecast how many orders would be placed with a particular restaurant on New Year's Eve, and some other times you might have to forecast how many oxygen cylinders would a hospital need. Scaler will try to make sure you do a good job in both the situations.
EDA, Resampling, Autocorrelation, Forecasting, Seasonal Naive, Double/Triple Exponential (Holt) Residual Analysis	1.0			
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		10.7	2.5	We will teach you how to read the latest Research Papers and we will discuss the relevant papers in class. This is an important skill to stay updated in the fast-changing field of ML and Deep Learning.
Neural Networks	7.0	2.3	0.5	Welcome to a new world! Understand the underlying Maths and write neural networks from scratch.
Neural Networks - MLP, Backpropagation, Hyperparameter Tuning, Practical Aspects of DL	4.0			
Keras, Tensorflow, Pytorch	3.0			
Computer Vision	10.0	3.3	0.8	You must have wondered how self-driving cars function. Dive into the inner workings of latest models and techniques that enable a machine to "see". Work on interesting projects related to e-commerce, video surveillance, and art museums.
Convolutional Neural Nets, Data Augmentation, Transfer Learning, CNN Visualisation	3.0			
Popular CNN Architecture - Alex, VGG, ResNet, Inception, DenseNet, EfficientNet, MobileNet	2.0			
Object Segmentation, Localisation and Detection	2.0			
Generative Models, VAEs, GANs, Attention Models, Siamese Networks, Advanced CV.	3.0			
Natural Language Processing	11.0	3.7	0.8	There is a lot more here, beyond just chatbots. How does Grammarly work? How does Shazam identify songs? How does Google Translate perform well even for the less common languages?
Text Processing and representation - Tokenization, Stemming, Lemmatization, Vector space modeling, Cosine Similarity, Euclidean Distance	2.0			
POS tagging, Dependency parsing, Topic Modeling, Language Modeling Embeddings	3.0			
Recurrent Neural Nets, Information Extraction, Entity Recognition, Transformers, HuggingFace, BERT, Building Chatbots	6.0			
Reinforcement Learning and Forecasting	4.0	1.3	0.3	Remember how you learned to ride a bicycle? You fall, you feel pain; you ride, you feel a rush. Let's use that principle to teach a computer whatever you want it to do.
Reinforcement Learning, Q-learning, Autonomous players, RNNs and LSTMs for forecasting.	4.0			
More Business Cases	0.0			Data Scientists help with business decisions and need to solve open-ended business problems. They need to know what data to even ask for. As such, understanding the business is a critical skill. It will help you in difficult business situations when you have to creatively build a new strategy or diagnose issues in the existing operations of the company.

ML Ops and Data Engineering	16.0	5.3	1.3	Shared with Academy / @Harshit
Data Engineering & Big Data	16.0	5.3	1.2	We offer a specialization in Data Engineering . Regardless of whether you take the specialization, essential concepts in Big Data and Distributed Systems will be covered as part of the core curriculum to help you understand data pipelines .
ML Ops	8.0	2.7	0.6	Don't just analyze data to create models, but also learn how to fetch data, store data, clean data, deploy model, monitor model performance, and update the data or model. Work with the latest cloud platforms and learn the latest tools.
Project scoping, Experiment tracking using MLFlow/W&B, Scripting (Flask/FastAPI/Streamlit), Testing, Versioning, Docker, CI/CD pipelines, AWS lambda, Monitoring using AWS Kibana, Drift	8.0			
ETL Pipeline	8.0	2.7	0.6	If data is the new oil, you certainly need pipelines! Learn how to handle massive volumes of data. Stand out as an exceptional Data Scientist or ML Engineer by understanding the architectural level decisions and designs.
	5.0			
Big Data and Distributed Systems - Hadoop, Map-reduce, Spark, PySpark, SparkSQL, Spark ML, Orchestration using Airflow, Serving using Flask	2.0			
Data Governance - Data quality, Data Dictionary, Data Access Management, Data storage and recovery procedure, Handling stereotypes and Social biases in data	1.0			The Program also covers advanced topics such as Data Governance and Data Dictionary which will help you stand out in your career.
Cloud Computing - Need for Cloud, What is Cloud Computing,reasons for having cloud computing, Key cloud services providers,Key Cloud Services,Challenges in Cloud Adoption,Case Studies and cheatsheet	1.0			you are on prem, update your infra via cloud as this is termed as future. Issues will be there but not the major ones which most fortune were facing on daily basis. We discuss here cloud with its merits and demerits

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✓ 0s completed at 23:50

