Project 5 - Part 2 Run an AdWords Campaign

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Project Summary

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Summary: In this project, I created and run search campaign in Google AdWords for 5 days with budget of \$10/day advertising Udacity free course "Differential Equations in Action" in India.

Results: Campaign did not result into conversions (measured as # of enrollments into the course) but generated 93 clicks with average CTR of 3.46% and average CPC of \$0.55. Among the 7 ads (4 expanded text ad and 3 responsive ads), one ad that utilized math lingo was responsible for almost 55% of all clicks and could work as a baseline for similar campaigns in the future.

Details on slides that follow:

- 1. Campaign Approach
- 2. Marketing Objective & KPI
- 3. Ad Groups, Ads and Keywords
- 4. Key Campaign Results (Clicks, CTR, Avg. CPC, Cost, CR)
- 5. Campaign Evaluation

Campaign Approach Description, Marketing Objective, and KPI

1. Approach Description

Assigned Course: Differential Equations in Action URL: <u>https://www.udacity.com/course/differential-equations-in-action--cs222</u>

Assigned Country: India

The campaign is structured around two Ad Groups that target two different audiences with interest in Differential Equations:

- Math Students (55 keywords) with 2 ads:
 - Beginner Math
 - Advanced Math
- Engineering Students (70 keywords) with 2 ads:
 - General Engineering students
 - Engineering students with interest in Python

Keywords for "Math Students" Ad Group respectively use math-related terminology (e.g. mathematical modeling, calculus, etc), while "Engineering Students" Ad Group makes emphasis on application side of the course (keywords: Calculus application problems, differential equations real examples, etc.).

Besides that, both Ad Groups share 29 course-specific keywords that were retrieved after viewing through the course content (e.g. Forward Euler Method, Logistic Growth Model, etc.)

O Markating Objective: Objective & KPI

Increase awareness and generate 3 leads for "Differential Equations in Action" free Udacity course by running a Google AdWords text ads campaign between June 1-5, 2020 with budget of \$10/day and advertising in India.

KPI:

Number of leads leading to website visits

Ad Groups Ads and Keywords

Ad Group #1: Engineering Students Ads & Keyword Lists

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Udacity Free Online Equations Ad udacity.com/cou	Course Differential	0
Solve real problems w from Physics, Biology, 100% Free.	ith differential equations. E Engineering, and Social Sc	xamples iences
Learn More	Enroll Now	



Keyword List:

Uses of differential equations Differential equations applications Applied calculus Applied differential equations Calculus for engineers Calculus an applied approach Calculus for scientists and engineers Calculus in electrical engineering Calculus in mechanical engineering Calculus applications in physics Calculus applications in biology Calculus applications in medicine Engineering calculus Engineering mathematics calculus **Engineering mathematics** Math for engineers Differential equations applications Differential equations in real world Differential equations applications in engineering Differential equations for engineers Differential equations applications in physics

Differential equations applications in biology Differential equations applications in medicine Differential equations applications in mechanical engineering Differential equations applications in real life Differential equations practice problems Differential equations problems Differential equations practice Differential equations real world applications Differential equations real life problems Differential equations real world problems Differential equations real examples Differential equations real life uses Differential equations uses Differential equations used in engineering Differential equations used in real life Differential equations used in physics Calculus shell method Calculus problems Calculus application problems Calculus applications

+ See common Keywords on Slide 8

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Ad Group #2: Math Students Ads & Keyword Lists





Keyword List:

math mooc mooc mathematics free math lessons online best math moocs calculus mooc calculus mooc courses calculus course online free differential equations Udacity Differential equations ap calculus Differential equations ap physics Differential equations online course Differential equations online Differential equations online class Differential equations online course free Differential equations made easy Differential equations for beginners

Differential equations mathematical modeling Differential equations engineering mathematics Mathematical models differential equations mathematical modeling of infectious disease mathematical modeling with differential equations mathematical modeling course Differential equations intuition Differential equations understand Differential equations understanding

+ See common Keywords on Slide 8



Common Keywords

 This is the course-specific keyword list used in both Ad Groups that was retrieved after reviewing the course content:

Logistic Growth model Logistic Growth differential equation Logistic growth calculus Logistic growth example Logistic growth model equation SIR model Python code heun's method differential equations heun's method python euler method differential equations python shell theorem differential equations Symplectic Euler Infection Modeling virus infection modeling infection computational modeling heat loss modeling heat loss model heat loss energy modeling Finite Element Method differential equations lorenz system application Forward Euler Method differential equations Forward Euler Method python Modeling fish growth Modeling fish population Exponential decay python exponential decay model exponential decay model half life exponential decay differential equation Hydraulic brake model Differential equations for population growth

Campaign Evaluation Results, Analysis and Recommendations

Key Campaign Results (Campaign & Ad Groups)

Present the results of your campaign and ad groups by completing the table below.

Ad Group	Max. CPC Bid	lmpr.	Clicks	CTR	Avg. Cost per Click	Conv.	CR	Cost per Conv	Cost
Math Students	77	2184	77	3.53 %	\$0.54	0	0	0	\$41.57
Engineer ing Students	16	504	16	3.17 %	\$0.59	0	0	0	\$9.42
Total		2688	93	3.46 %	\$0.55	0	0	0	\$50.99

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Key Campaign Results (Ads)

Present the results of your ads by completing the table below.

Ad	Clicks	CTR	Avg. Cost per Click	Conv.	CR	Cost per Conv.
Ad Group 1, Ad 1	51	3.11%	\$0.46	0	0	0
Ad Group 1, Ad 2	14	4.67%	\$0.69	0	0	0
Ad Group 2, Ad 1	6	2.99%	\$0.19	0	0	0
Ad Group 2, Ad 2	6	5.04%	\$0.68	0	0	0

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Key Campaign Results (Keywords)

Present the three keywords you consider most successful based on your marketing objective.

Keyword	Click s	CTR	Avg. Cost per Click	Conv.	CR	Cost per Conv.
"Differential equations"	31	2.93%	\$0.39	0	0	0
Free math lessons online	19	3.85%	\$0.68	0	0	0
"differential calculus"	6	4.48%	\$0.83	0	0	0

Campaign Evaluation

- The campaign was not successful in terms of conversions as it did not generate any conversions. Therefore, **ROI was negative** for this campaign.
- However, the major objective was to create awareness of the Udacity free course "Differential Equations in Action" and generate clicks. Judging campaign effectiveness by the number of clicks, campaign was successful as it exceed expectations and resulted in 93 clicks within 5 days
- Campaign's average CPC is \$0.55 which is 5.5 times less than the max CPC bid of \$3.00
- "Math Students" Ad Group performed better than "Engineering Students" Ad Group generating almost 83% of all clicks. It also had higher CTR (3.53% vs 3.17%) and lower average CPC (\$0.54 vs \$0.59).
- Among 7 ads (4 expanded texts ads and 3 responsive ads), one ad from "Math Students" Ad Group generated almost 55% of all clicks, although its CTR wasn't the highest. (snapshot on the right)

Differential Equations | Free Online Course | Udacity

udacity.com/course/differential-eq Learn how to build mathematical models and translate them into Python code. Fun learning with cool problems

 Keywords with the highest CPC were "MOOC mathematics" (\$2.94), "Calculus applications" (\$1.51) and "differential calculus" (\$1.43) and are therefore subject to greater
Instrumentation in AdWords

Recommendations for future campaigns

- Because the Ad Group structured around math lingo performed better than the Ad Group with focus on engineering applications performed much better, I would
 focus on math keywords (differential equations, mathematical modeling) more in the future.
- I would also set up an A/B test with even rotation of Ads to test user conversion in different customer journey phases - awareness versus desire. For this, I will need to create new Ads with new Ad Copies
- I would also consult the engineering team to make sure that conversion tracking is set up properly
- Advertising the Differential Equations course is not easy as it is not that "sexy" (compared for instance to a course in Digital Marketing, Web Programming or Data Science) and there is probably not much demand to drive conversions. Hence, in the next campaign I would **target tail keywords** which should keep the avg CPC low but let the campaign **run for longer period** (more than 5 days). Such tactics would allow very narrow targeting with higher potential of conversions.



Appendix Screenshots for Reference

Example: Ad Groups

•	Ad group $\ \downarrow$	Status	Conversions	Cost / conv.	Ad group type	Clicks	Impr.	CTR	Avg. CPC	Cost	Conv. rate
٠	Math Students	Campaign paused	0.00	\$0.00	Standard	77	2,184	3.53%	\$0.54	\$41.57	0.00%
•	Engineering Students	Campaign paused	0.00	\$0.00	Standard	16	504	3.17%	\$0.59	\$9.42	0.00%
	Total: 💿		0.00	\$0.00		93	2,688	3.46%	\$0.55	\$50.99	0.00%
\sim	Total:		0.00	\$0.00		93	2,688	3.46%	\$0.55	\$50.99	0.00%

Example: Ads

•	Ad	Ad group	Status	Ad type	Clicks	\downarrow Impr.	CTR	Avg. CPC	Cost	Conversion
•	Differential Equations Free Online Course Udacity udacity.com/course/differential-eq Learn how to build mathematical models and translate them into Python code. Fun learning with cool problems	Math Students	Campaign paused	Expanded text ad	51	1,641	3.11%	\$0.46	\$23.46	0.00
•	Learn Differential Equations Udacity Free Course Online udacity.com/course/differential-eq Build intuition for differential equations and understand math better. Fun learning with cool problems	Math Students	Campaign paused	Expanded text ad	14	300	4.67%	\$0.69	\$9.60	0.00
• -	Learn Differential Equations Free Online Course Udacity +2 more udacity.com/course/differential-eq Build intuition for differential equations and understand math better. Learn how to build View assets details	Math Students	Campaign paused	Responsive search ad	12	243	4.94%	\$0.71	\$8.51	0.00
•	Differential Equations Course Udacity Free udacity.com/course/differential-eq Solve real problems in the applied sciences with differential equations. Videos and interactive quizzes	Engineering Students	Campaign paused	Expanded text ad	6	201	2.99%	\$0.19	\$1.15	0.00
•	Differential Equations Udacity Free Course udacity.com/course/differential-eq Take free course in applied differential equations with code-based quizzes in Python. No coding skills required!	Engineering Students	Campaign paused	Expanded text ad	6	119	5.04%	\$0.68	\$4.07	0.00
•	Differential Equations Free Course Udacity +1 more udacity.com/course/differential-eq Take free course in applied differential equations with code-based quizzes in Python View assets details	Engineering Students	Campaign paused	Responsive search ad	2	119	1.68%	\$0.26	\$0.51	0.00
•	Differential Equations Udacity Free Online Course Udacity +6 more udacity.com/course/differential-eq Solve real problems with differential equations. Take free course in applied View assets details	Engineering Students	Campaign paused	Responsive search ad	2	65	3.08%	\$1.85	\$3.69	0.00
	Total: Ads 💿				93	2,688	3.46%	\$0.55	\$50.99	0.00

Example: Keywords

	•	Keyword	Ad group	Status	Conversions	Cost / conv.	\downarrow Clicks	Impr.	CTR	Avg. CPC	Cost	Conv. rate	Avg. cost
Total: I	Keywo	rds 🕐			0.00	\$0.00	93	2,688	3.46%	\$0.55	\$50.99	0.00%	\$0.55
	•	"differential equations"	Math Students	Campaign paused	0.00	\$0.00	31	1,057	2.93%	\$0.39	\$12.04	0.00%	\$0.39
	0	free math lessons online	Math Students	Campaign paused	0.00	\$0.00	19	493	3.85%	\$0.68	\$12.93	0.00%	\$0.68
	•	"differential calculus"	Math Students	Campaign paused	0.00	\$0.00	6	134	4.48%	\$0.83	\$4.97	0.00%	\$0.83
	8	Udacity free course	Math Students	Campaign paused	0.00	\$0.00	4	17	23.53%	\$0.50	\$2.00	0.00%	\$0.50
	• •	+Differential +equations understand	Math Students	Campaign paused	0.00	\$0.00	4	121	3.31%	\$0.23	\$0.91	0.00%	\$0.23
	×	Calculus problems	Engineering Students	Campaign paused	0.00	\$0.00	4	28	14.29%	\$0.97	\$3.89	0.00%	\$0.97
	8	Differential equations applications	Engineering Students	Campaign paused	0.00	\$0.00	4	19	21.05%	\$0.38	\$1.50	0.00%	\$0.38
	8	differential calculus	Math Students	Campaign paused	0.00	\$0.00	2	49	4.08%	\$1.43	\$2.85	0.00%	\$1.43
	8	Differential equations online	Math Students	Campaign paused	0.00	\$0.00	2	27	7.41%	\$0.28	\$0.56	0.00%	\$0.28
	8	Differential equations for beginners	Math Students	Campaign paused	0.00	\$0.00	2	13	15.38%	\$0.53	\$1.06	0.00%	\$0.53
	•	+differential +equations explained	Math Students	Campaign paused	0.00	\$0.00	2	30	6.67%	\$0.15	\$0.30	0.00%	\$0.15
	•	Engineering mathematics +differential +equations	Engineering Students	Campaign paused	0.00	\$0.00	2	98	2.04%	\$0.26	\$0.51	0.00%	\$0.26
	8	mooc mathematics	Math Students	Campaign paused	0.00	\$0.00	1	9	11.11%	\$2.94	\$2.94	0.00%	\$2.94