



5 Courses

Introduction to the
Tidyverse

Importing Data in the
Tidyverse

Wrangling Data in the
Tidyverse

Visualizing Data in the
Tidyverse

Modeling Data in the
Tidyverse



Jun 15, 2021

Julia Breitenbruch

has successfully completed the online, non-credit Specialization

Tidyverse Skills for Data Science in R

This Specialization is intended for data scientists with some familiarity with the R programming language who are seeking to do data science using the Tidyverse family of packages. Through 5 courses, you will cover importing, wrangling, visualizing, and modeling data using the powerful Tidyverse framework. The Tidyverse packages provide a simple but powerful approach to data science which scales from the most basic analyses to massive data deployments. This course covers the entire life cycle of a data science project and presents specific tidy tools for each stage.

The online specialization named in this certificate may draw on material from courses taught on-campus, but the included courses are not equivalent to on-campus courses. Participation in this online specialization does not constitute enrollment at this university. This certificate does not confer a University grade, course credit or degree, and it does not verify the identity of the learner.

Stephanie Hicks, PhD
Assistant Professor
Biostatistics

Shannon Ellis, PhD
Assistant Teaching
Professor
Cognitive Science
UC San Diego

Carrie Wright, PhD
Research Associate
Biostatistics

Roger D. Peng, PhD
Associate Professor
Biostatistics

Verify this certificate at:
coursera.org/verify/specialization/XJGMXWDJL84J



4 Courses

Mathematical Biostatistics
Boot Camp 1

Mathematical Biostatistics
Boot Camp 2

Advanced Linear Models for
Data Science 1: Least
Squares

Advanced Linear Models for
Data Science 2: Statistical
Linear Models



Jun 12, 2021

Julia Breitenbruch

has successfully completed the online, non-credit Specialization

Advanced Statistics for Data Science

Congratulations! You have completed all four courses of Advanced Statistics for Data Science - a Johns Hopkins Specialization. As part of this Specialization, you have learnt the fundamental concepts in probability, statistics and linear models. You now have a firm foundation in the linear algebraic treatment of regression modeling, which will greatly augment your general understanding of regression models, which will empower your journey in the world of data science.

Brian Caffo, PhD, MS
Department of
Biostatistics
Johns Hopkins
Bloomberg School of
Public Health

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Verify this certificate at:
coursera.org/verify/specialization/KC6T3WWESCGE



8 Courses

Foundations: Data, Data, Everywhere

Ask Questions to Make Data-Driven Decisions

Prepare Data for Exploration

Process Data from Dirty to Clean

Analyze Data to Answer Questions

Share Data Through the Art of Visualization

Data Analysis with R Programming

Google Data Analytics Capstone: Complete a Case Study



Apr 17, 2021

Julia Breitenbruch

has successfully completed the online, non-credit Professional Certificate

Google Data Analytics

Those who earn the Google Data Analytics Professional Certificate have completed eight courses, developed by Google, that include hands-on, practice-based assessments and are designed to prepare them for introductory-level roles in Data Analytics. They are competent in tools and platforms including spreadsheets, SQL, Tableau, and R. They know how to prepare, process, analyze, and share data for thoughtful action.

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Verify this certificate at:
coursera.org/verify/professional-cert/6TZLP9DZDGA5



5 Courses

Getting Started with Data
Visualization in R

Data Visualization in R with
ggplot2

Advanced Data Visualization
with R

Publishing Visualizations in R
with Shiny and
flexdashboard

Data Visualization Capstone



Apr 16, 2021

Julia Breitenbruch

has successfully completed the online, non-credit Specialization

Data Visualization & Dashboarding with R

In this Specialization, learners developed and honed their skills using R to produce data visualizations. Learners created a range of figures, from simple figures like histograms and scatter plots to more complex figures like alluvial diagrams and heat maps. Learners incorporated these visualization into reproducible reports and data dashboards. Learners completed a Capstone at the end of the Specialization to apply their knowledge and skills in an individual data visualization project.

Collin E. Paschall,
PhD/JD

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Verify this certificate at:
coursera.org/verify/specialization/UJ4ZM7DWABHR



3 Courses

Excel Fundamentals for
Data Analysis

Data Visualization in Excel

Excel Power Tools for Data
Analysis



Mar 25, 2021

Julia Breitenbruch

has successfully completed the online, non-credit Specialization

Excel Skills for Data Analytics and Visualization

Upon completing this specialization, you will be able to bring data to life using advanced Excel functions, creative visualizations, and powerful automation features. These courses will equip you with a comprehensive set of tools for transforming, linking, and analysing data. You will master a broad range of charts and create stunning interactive dashboards. Finally, you will explore a new dimension in Excel with PowerPivot, Get and Transform, and DAX. Harnessing the power of an underlying database engine, we will remove the 1,048,576 row limitation, completely automate data transformation, create data models to effectively link data, and open the gateway to Power Business Intelligence.

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Nicky Bull, BSc Hons in
Computer Science, BA
in English Literature,
Postgraduate
Certificate in Education.

Verify this certificate at:
coursera.org/verify/specialization/KWFLT6PWGSK4



5 Courses

Python Basics

Python Functions, Files, and
Dictionaries

Data Collection and
Processing with Python

Python Classes and
Inheritance

Python Project: pillow,
tesseract, and opencv



Feb 7, 2021

Julia Breitenbruch

has successfully completed the online, non-credit Specialization

Python 3 Programming

This specialization teaches the fundamentals of programming in Python 3. We will begin at the beginning, with variables, conditionals, and loops, and get to some intermediate material like keyword parameters, list comprehensions, lambda expressions, and class inheritance. You will have lots of opportunities to practice. You will also learn ways to reason about program execution, so that it is no longer mysterious and you are able to debug programs when they don't work. By the end of the specialization, you'll be writing programs that query Internet APIs for data and extract useful information from them. And you'll be able to learn to use new modules and APIs on your own by reading the documentation. That will give you a great launch toward being an independent Python programmer.

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Stephen Oney *Paul Resnick*

Steve Oney
Assistant Professor
School of Information

Paul Resnick
Michael D. Cohen
Collegiate Professor
School of Information

Jaclyn Cohen

Jaclyn Cohen
Lecturer
School of Information

Christopher Brooks

Christopher Brooks
Research Assistant
Professor
School of Information

Verify this certificate at:
coursera.org/verify/specialization/L6XKMBVAVNNF



5 Courses

Introduction to Data
Science in Python

Applied Plotting, Charting &
Data Representation in
Python

Applied Machine Learning in
Python

Applied Text Mining in
Python

Applied Social Network
Analysis in Python



Nov 14, 2020

Julia Breitenbruch

has successfully completed the online, non-credit Specialization

Applied Data Science with Python

The 5 courses in this University of Michigan specialization introduce learners to data science through the python programming language. This skills-based specialization is intended for learners who have a basic python or programming background, and want to apply statistical, machine learning, information visualization, and text analysis techniques to gain new insight into their data. In the final course, students will work on real-world data analysis projects, building a portfolio which showcases their work while at the same time helping real clients gain a better understanding of their data.

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Christopher Brooks
Research Assistant
Professor
School of Information

Daniel Romero, Ph.D.
Assistant Professor
School of Information
University of Michigan

Kevyn Collins-
Thompson
Associate Professor
School of Information

V. G. Vinod Vydiswaran
Assistant Professor
School of Information

Verify this certificate at:
coursera.org/verify/specialization/BFCU2QVRPVYB

ZERTIFIKAT

Julia Breitenbruch


geboren am 2. Oktober 1973,
hat im Zeitraum vom 01.08.2016 bis 26.08.2016
an der folgenden beruflichen Qualifizierung teilgenommen:

SQL - relationale Datenbanken

Note: sehr gut (96 Punkte)

4 Wochen Vollzeitunterricht
Die Lehrgangsinhalte sind auf der Rückseite aufgeführt.

Mannheim, 26.08.2016

A handwritten signature in black ink, reading "N. Fostiropoulos".

Niko Fostiropoulos
Leiter alfatraining Bildungszentrum e. K.



Zertifizierter Bildungsträger
Zulassung nach AZAV
Qualitätsmanagement nach DIN EN ISO



10 Courses

The Data Scientist's Toolbox

R Programming

Getting and Cleaning Data

Exploratory Data Analysis

Reproducible Research

Statistical Inference

Regression Models

Practical Machine Learning

Developing Data Products

Data Science Capstone



Jul 14, 2016

Julia Breitenbruch

has successfully completed the online, non-credit Specialization

Data Science

The Data Science Specialization covers the concepts and tools for an entire data science pipeline. Successful participants learn how to use the tools of the trade, think analytically about complex problems, manage large data sets, deploy statistical principles, create visualizations, build and evaluate machine learning algorithms, publish reproducible analyses, and develop data products. This certificate does not confer academic credit toward a degree or official status at the Johns Hopkins University.

Jeff Leek, PhD; Roger Peng, PhD; Brian Caffo, PhD

Department of
Biostatistics
Johns Hopkins
Bloomberg School of
Public Health

The online specialization named in this certificate may draw on material from courses taught on-campus, but the included courses are not equivalent to on-campus courses. Participation in this online specialization does not constitute enrollment at this university. This certificate does not confer a University grade, course credit or degree, and it does not verify the identity of the learner.

Verify this certificate at:
coursera.org/verify/specialization/2634K5WGNVUR



**THE
POWER
TO KNOW.**

SAS® Certified Advanced Programmer for SAS®9

SAS recognizes that

Julia Breitenbruch

**has earned the credential identified above
and fulfilled the requirements
for certification by SAS.**

Issued: 01JUN2011



SAS® Certified Base Programmer for SAS®9

SAS recognizes that

Julia Breitenbruch

has earned the credential identified above
and fulfilled the requirements
for certification by SAS.

Issued: 22DEC2010

RUPRECHT-KARLS-UNIVERSITÄT HEIDELBERG
FAKULTÄT FÜR MATHEMATIK UND INFORMATIK

DIPLOM

Frau Julia BREITENBRUCH

geboren am 2.10.1973

in Regensburg

hat am 1. 9.2004

die Diplom-Hauptprüfung für Mathematik

mit der Gesamtnote

gut

an der Universität Heidelberg bestanden. Auf Grund dieser Prüfung wird ihr
hiermit der akademische Grad

DIPLOM-MATHEMATIKERIN

verliehen.

Heidelberg, den 1.9.2004

Prof. Dr. W. Krieger
Prüfungsvorsitzender



Prof. Dr. R. Rannacher
Pro-Dekan

RUPRECHT-KARLS-UNIVERSITÄT HEIDELBERG
FAKULTÄT FÜR MATHEMATIK UND INFORMATIK

Prüfungszeugnis

Diplom-Hauptprüfung für Studierende der Mathematik

Julia BREITENBRUCH

geboren am 2.10.1973

in Regensburg

hat sich am 1. 9.2004

der **Diplom-Hauptprüfung** für Mathematik
an der Universität Heidelberg unterzogen und die Prüfung mit der

Gesamtnote

gut

bestanden.

Das Thema der Diplomarbeit lautete:

Verschiedene Konstruktionen
für

Leech-Gitter und Golay Code

Die Bewertungen der Diplomarbeit und der Leistungen in den mündlichen Prüfungen
sind unten aufgeführt.

Heidelberg, den 1.9.2004

Der Vorsitzende des Diplom-Prüfungsausschusses in Mathematik

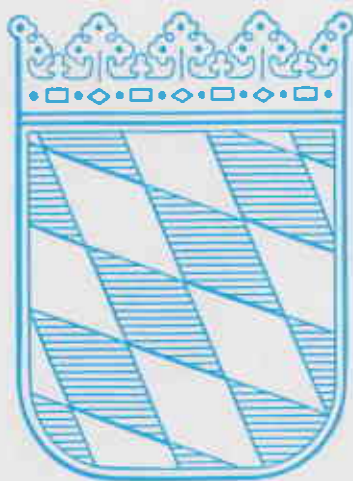


Prüfungsgebiete	Bewertungen	Prüfer
1. Mathematik I (Reine Mathematik)	sehr gut-(1,3)	End/Böge
2. Mathematik II (Angewandte Mathematik)	befriedigend+(2,7)	Mürmann
3. Mathematik III (Studienschwerpunkt)	sehr gut-(1,3)	Böge
4. Nebenfach Philosophie	gut-(2,3)	Koenig
5. Diplomarbeit	sehr gut-(1,3) sehr gut-(1,3)	Böge Matzat

Notenskala: sehr gut, gut, befriedigend, ausreichend

Lessing-Gymnasium Neu-Ulm

ZEUGNIS
DER
ALLGEMEINEN HOCHSCHULREIFE



Dem Zeugnis liegen zugrunde:

Die „Vereinbarung zur Neugestaltung der gymnasialen Oberstufe in der Sekundarstufe II vom 7. Juli 1972 in der Fassung vom 11. April 1988“ (Beschuß der Kultusministerkonferenz vom 11. April 1988)

die Vereinbarungen über die Einheitlichen Prüfungsanforderungen in der Abiturprüfung (EPA)

die „Vereinbarung über die Abiturprüfung der neugestalteten gymnasialen Oberstufe in der Sekundarstufe II (gemäß Vereinbarung der Kultusministerkonferenz vom 7. Juli 1972)“

(Beschuß der Kultusministerkonferenz vom 13. Dezember 1973 in der jeweils geltenden Fassung),

das „Bayerische Gesetz über das Erziehungs- und Unterrichtswesen (BayEUG)“ (BayRS 2230-1-1-K) und die „Schulordnung für die Gymnasien in Bayern (GSO)“ vom 16. Juni 1983 (GVBl S. 681) in der jeweils geltenden Fassung.

Lessing-Gymnasium Neu-Ulm

(Name und Ort der Schule)

Frau Julia Breitenbruch,

geboren am 2. Oktober 1973 in Regensburg,

wohnhaft in Neu-Ulm/Burlafingen, hat sich nach dem Besuch der Oberstufe des Gymnasiums der Abiturprüfung unterzogen.

I. Einzelergebnisse in der Kursphase

Die beiden Leistungskursfächer sind durch LF gekennzeichnet, Grundkursfächer bleiben ohne besondere Kennzeichnung.
Die Bewertungen von Grundkursen, die nicht in die Gesamtqualifikation eingehen, sind in Klammern gesetzt.

Fach	Zahl der eingebrachten Halbjahres- leistungen	Halbjahresleistung * in einfacher Wertung im Ausbildungsabschnitt			
		12/1	12/2	13/1	13/2
Sprachlich-literarisch- künstlerisches Aufgabenfeld	—	—	—	—	—
Deutsch	4	10	11	09	11
Latein (LF)	4	12	12	12	13
Musik	2	—	—	13	14
Gesellschaftswissenschaft- liches Aufgabenfeld	—	—	—	—	—
Geschichte	4	10	08	09	11
Sozialkunde	2	08	11	—	—
Wirtsch. u. Rechtsl.	0	—	—	(06)	(03)
Ethik	4	12	12	11	10
Psychologie	2	14	13	—	—
Mathematisch-naturwissen- schaftliches Aufgabenfeld	—	—	—	—	—
Mathematik (LF)	4	11	11	10	12
Biologie	4	08	08	12	11
Physik	2	09	08	—	—
-----	—	—	—	—	—
Sport	0	(06)	(06)	(07)	(04)
-----	—	—	—	—	—
-----	—	—	—	—	—
-----	—	—	—	—	—

II. Leistungen in der Abiturprüfung

Prüfungsfach		Prüfungsergebnisse	
		schriftlich	mündlich
1.	Latein (LF)	14	---
2.	Mathematik (LF)	10	---
3.	Geschichte	08	---
4.	Biologie		10

III. Berechnung der Gesamtqualifikation und der Durchschnittsnote

Punktsumme aus 6 Leistungskurshalbjahresleistungen und der Facharbeit jeweils in zweifacher Wertung:

167

mindestens 70,
höchstens 210 Punkte

Punktsumme aus 22 Grundkurshalbjahresleistungen in einfacher Wertung:

231

mindestens 110,
höchstens 330 Punkte

Punktsumme aus den Prüfungen in vierfacher Wertung und den Kursen der Prüfungsfächer im Ausbildungsabschnitt 13/2 in einfacher Wertung:

215

mindestens 100,
höchstens 300 Punkte

Gesamtpunktzahl:

613

mindestens 280,
höchstens 840 Punkte

Durchschnittsnote:

2,0

zwei, null

(in Worten)

IV. 1. Fremdsprachen:

Fremdsprachen außer Arbeitsgemeinschaften und Wahlfächern		Jahrgangsstufen	
		von	bis *
1. Fremdsprache	Latein	5	13
2. Fremdsprache	Englisch	7	11
3. Fremdsprache	Französisch	9	11

* jeweils einschließlich

Dieses Zeugnis schließt das Latinum gemäß Vereinbarung der Kultusministerkonferenz vom 26. Oktober 1979 ein. -----

2. Pflichtfächer, die vor Beginn der Kursphase abgeschlossen worden sind:

Fach	Jahrgangsstufen		Fach	Jahrgangsstufen	
	von	bis *		von	bis *
Englisch	7	11	Chemie	11	11
Französisch	9	11	-----	---	---
Kunsterziehung	5	11	-----	---	---
Erdkunde	5	11	-----	---	---

* jeweils einschließlich

V. Bemerkungen:**VI. Frau Julia Breitenbruch**

hat nach Erfüllung der Voraussetzungen die Abiturprüfung bestanden und damit die Befähigung zum Studium an einer Hochschule in der Bundesrepublik Deutschland erworben.

9. Juli 1993

Vorsitzende/r des Prüfungsausschusses:

Schulleiter/in:



Dr. Bauer

Oberstudiendirektor




Dr. Bauer

Oberstudiendirektor