

# Engaging students in science and faith through study-abroad

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# Bethel University

- Just north of St. Paul/Minneapolis, MN
- ~2700 traditional undergraduates
  - Relatively large natural/physical science programs
    - 13 biologists
    - 9 chemists/biochemists
    - 7 physicists/engineers



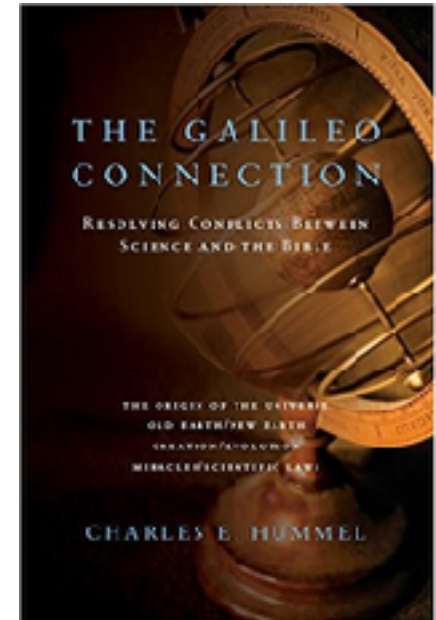
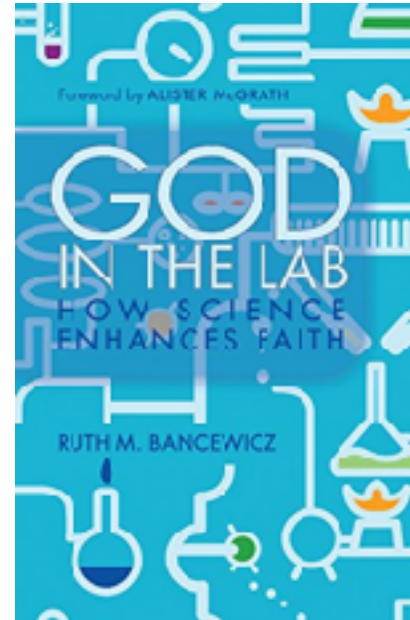
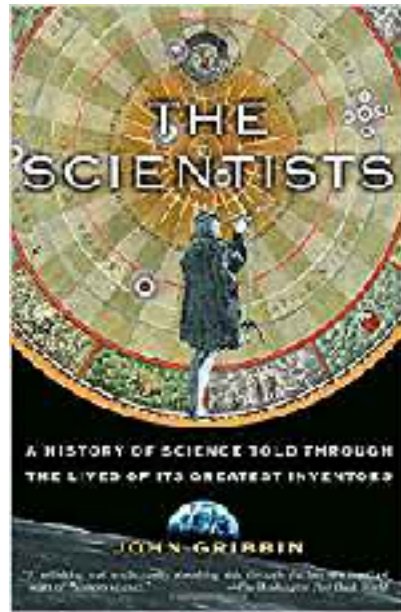
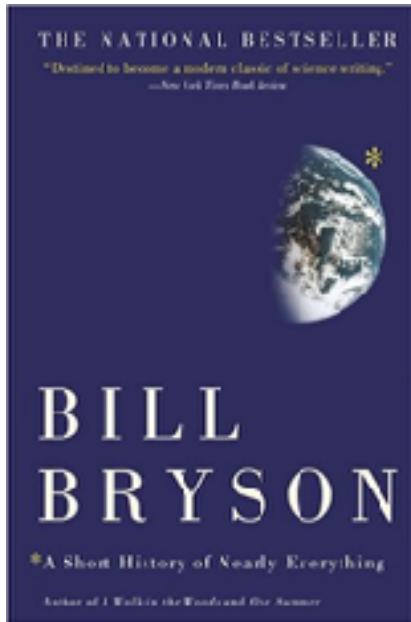
# Who is Wade Neiwert?

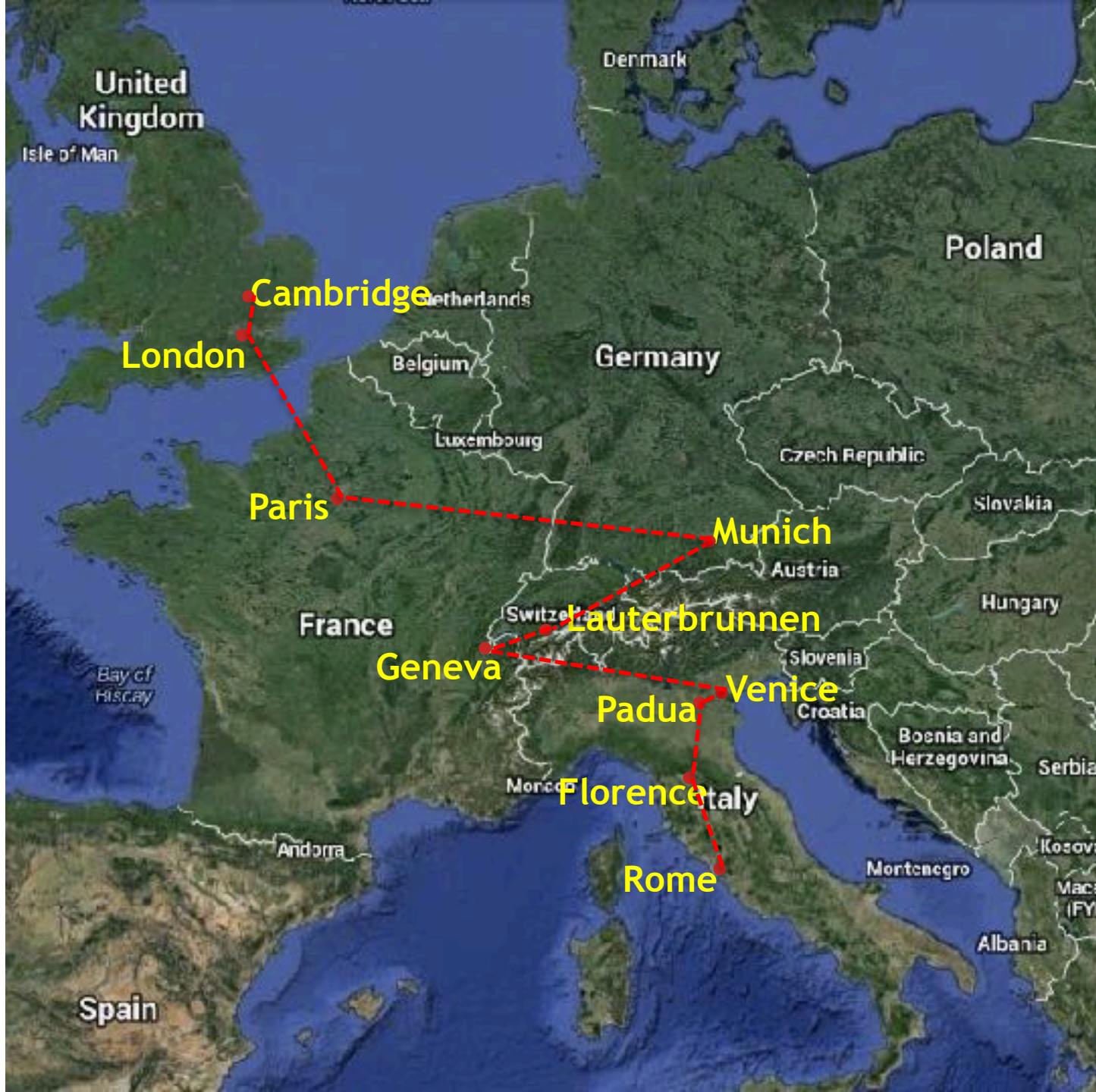


# History of Science in Europe

- Meets upper-division general education requirement of “science, technology, & society”
- Math and Lab Science prerequisites
- January term (~3 weeks) study-abroad experiential learning opportunity
- Two faculty and 25-30 students
- \$4200 (all-inclusive)
- Read 3 books, group site presentation, lead group discussion, journal/blog, final paper

# A few references





United Kingdom

Isle of Man

Denmark

Poland

Cambridge

Netherlands

London

Belgium

Germany

Luxembourg

Czech Republic

Paris

Munich

Slovakia

France

Switzerland

Lauterbrunnen

Austria

Hungary

Bay of Biscay

Geneva

Padua

Venice

Slovenia

Croatia

Bosnia and Herzegovina

Serbia

Spain

Andorra

Monaco

Florence

Italy

Rome

Montenegro

Albania

Kosovo

Macedonia (FYROM)

# Active learning classroom



# Non-traditional lecture halls





# Unconventional commute



# Science in Churches



Basilica of Santa Croce



Tomb of Galileo

# Art, Religion, and their Stories



*Anunciation*  
Martini and Mimi

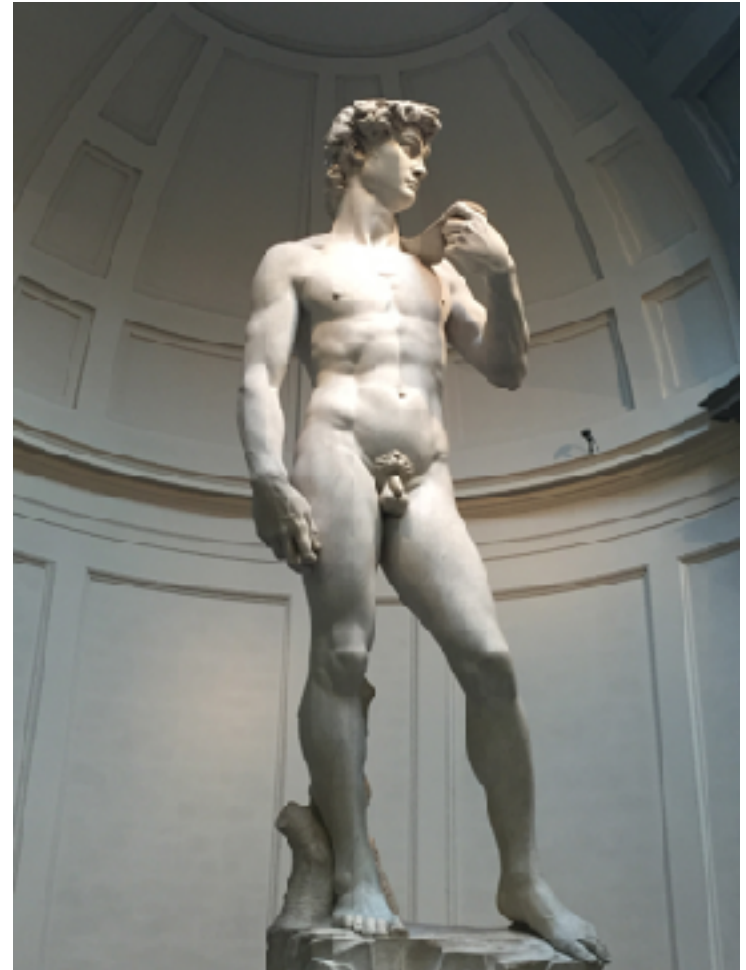
*Birth of Venus*  
Botticelli



# Masterpieces of Art and Form



*Holy Family, Michelangelo*



*David, Michelangelo*

# La Specola Wax Museum



# Museo Galileo



Galileo's fingers



Galileo's telescopes and books

# Course Blog

- [bethelchemprof.wordpress.com](http://bethelchemprof.wordpress.com)
- [historyofscience2017.wordpress.com](http://historyofscience2017.wordpress.com)

# Cambridge, Crepes, and Classical Science



We enjoyed some more crepes from a local stand which brought back waves of nostalgia from Paris. I think it's safe to say that we have all consumed our body weight in those delicious treats.

If it weren't for these two guys teaching on this subject I would've fallen asleep before you could finish saying quantum.

Whether or not patterns or direct relationships are visible to the human eye doesn't mean they are not present. Ralf discussed how we also see this concept when we view the trinity. Each part is equally God, but each forms a unique relationship with humans.



# *The Mechanistic View of the Universe and some Math Perks from our Trip*



There are positive and negative effects to the clock analogy. Positively, it acknowledges that God is the creator. However, it takes away the personal relationship with God and implies that He doesn't play an active role in our lives today. In other words, we don't need Him to continue living as we are. This, friends, is false. We do need God in our daily lives. We need His love, mercy, protection, and much more.

# *Beauty in Europe*



This month has been unforgettable, each day packed with new beauty.

What makes beautiful things beautiful? And why are we so compelled towards beauty?

I think this appreciation for things that we consider beautiful signals something primitive. Humans have an innate appreciation for discipline, energy, and talent. We feel heightened emotions when we acknowledge such characteristics. We recognize and appreciate the creation process that lies behind the product. We are always looking for something that gives priority to our souls, rather than our physical needs.



# *Thoughts on a Sunday*



We've seen many cities, countries, sights and scenes that have vastly opened my eyes to a much larger world we occupy.

We realized the importance of community. This trip would be so difficult to do by yourself, or without being surrounded by strangers that turned into dear friends.

Something at the core of what Bethel would like us to know at the end of our time there is how our passions and callings are able to point to God. Science and faith have only recently had diverging paths, but it is so relieving to know that this parting of ways was only recently; that science, religion and philosophy were braided

# *Made in the Image of God*



Through the places we have visited and the discussions we have had I see how the relationship between faith and science support each other. I think one of the most interesting learning moments for me happened in Cambridge.

There was one speaker in particular who studies DNA. He talked to us about the image of God. He mentioned how in order to study DNA you must look at it in the context of a cell. Then you must study the cell in the context of an organism. People are more than just genes. It takes more than just cells to make us human. A person becomes a person through relationships. God's creation was created for relationship. We were designed to be in relationship with Him and with each other.

# *The Appreciation of Disciplines and Beauty*



It is almost like beauty is something that is beyond us! I have been pondering some questions. Can we create beauty or can we only see it? Do animals appreciate beauty? Why do I have almost 600 pictures on my phone right now? As I look at the human wax models at La Specola or at the Swiss alps, I can't help but think that God is the only one who could make something so beautiful! When we look at art or nature there is a purpose behind it. Sometimes the viewer doesn't know the purpose or has to translate it themselves, but I think that it is where we can attribute characteristics of the beauty of the piece to the author.

# *Closing thoughts*



This trip has been comparable to speed dating, travel edition.

Although this is a history of science course I love how intentionally faith has also been deeply intertwined with everything that we do. It has been inspirational to see how intelligent, outspoken Christians have thrived in fields where faith is often looked down upon.

We serve a pretty incredible God and this trip has helped me to see and appreciate the ways He is intimately involved in all aspects of life!

# What next?

A favorite pastime on this trip was to pose a question which everyone would take turns answering.

What have you learned about yourself, and how will your life look different when you return?

“I learned that it is worth it to try a new experience that is out of my comfort zone. I tend to be a home body and am proud of myself. When I get back, I want to go out and explore Minneapolis more.”

“I learned that a career in Science is very compatible with faith. Many scientists in the past and many today are Christians; I am not alone.”

“I loved slowing down to visit with others at meal time. Actually, remembering to slow down and take in the moment is so important. I want to apply this at home.”



# *In Closing*



I believe that these physical laws were invented by God as means to do his will which includes creation and some miracles. I believe that God has a toolbox that he uses to communicate and create. Many of those scientific phenomena we are able to explain using science. Science is really just another part of creation and the numbers and symbols we use are just convenient ways for us to understand them in our own terms. Overall, when studying any science, I am blown away by the intelligence and creativity of our Creator that had the idea to create life with the complexity of a cell or to create matter itself with the complexity of the atom and subatomic particles. I think it is a privilege to study the handiwork of God's creation. It's hard, and frustrating, but also exciting, aweing, and humbling.



# *Can we all just stay another month?*



How is it possible that a month has gone by already? I have to say this has definitely been the most turbulent, tiring and beautiful January I've ever had.

When I'm in school sometimes it can be easy to separate my academic life from the spiritual life, but if God created humanity and nature it stands to reason that we can learn more about his nature by studying them. In this class we have discussed that there is a difference between the book of God's word (the Bible) and the book of his work (creation).

By studying scientific principles we observe God's omnipresence and consistency and recognize that He is what holds scientific truth together.

# *A Look Back*



While all of the journal questions and class discussions were science related, most ended up being tied back to our faith in some way. I believe that is what made this trip so amazing. Any class can travel to Europe and hit up all the main attractions, but our experiences went so much deeper.

Many of the questions triggered conversations which lasted hours outside of “class time” with other students. The course caused us to question our presumptions of both faith and science, and to dig for truth in all areas of our life.

# Future Steps

- Integrate pre- and post-experience surveys on issues of science and faith
  - Identify areas of strength and weakness
  - Evaluate student perceptions
- Develop a course-specific “reader”
  - Primary sources (letters, articles, excerpts, etc.)
  - City history and details
  - Reflections on faith and science in connection with sites visited

# Thank you

- Ralf Kalms and Trey Maddox
- International Studies Office, Bethel University
- ASA

