Phsc 201/ Core 315 - Perspectives in Physical Science
TTh 12:25-1:40 pm CL 1307

Instructors
This course is team-taught by physicist Dr. John Zwart (SB -224, x 6288, zwart@dordt.edu) and philosopher Dr. Roger Henderson (FO-121, x 6330, rogerh@dordt.edu). You are encouraged to visit us in our offices any (free) time or by appointment.

Course Description
We will be considering historical, philosophical, and theological perspectives in the physical sciences from a reformed perspective. The historical and contemporary roles of Christianity and other influential forces in science will be considered. Prominent positions in the philosophy of science will be examined. Aspects of the complex interactions between Christian faith and the physical sciences will be discussed.

Our primary method will be in-class discussion of assigned readings. It is very important to have read the assignments before each class session.

Course Objectives
Through this course, students will:
• explore the inner connection between faith and scientific understanding by examining some key operational concepts crucial to the growth of science.
• stimulate vocational commitment to science as an integral part of a religious outlook.
• investigate particular moments in the history of science – people and ideas contributing to this extraordinarily productive activity.
• examine the conceptual struggles which preceded the establishment of scientific methods in the light of certain theological developments.
• witness struggles in establishing reliable methods of testing and accounting for theories.
• develop good interpretive, writing, and speaking skills.
• cultivate intellectual and spiritual courage and humility.
• recognize the pitfalls of narrowness, dogmatism, idealizing or villainizing science, and of dismissing theology.

Texts
Del Ratzch Science and Its Limits: The Natural Sciences in Christian Perspective
Thomas Kuhn The Structure of Scientific Revolutions 2nd edition

The book by Ratzch provides an overview of what science is, philosophy of science, and specifically a reformed view of these. The Kuhn book is a historically important one (it dates from the 1960s) which looks at the history of scientific development with a focus on how science changes. These texts will be augmented with occasional articles which will be made available to you and some on-line content.

Assignments and Evaluation Methods
There will be two papers of 7 -10 pages length assigned and two exams (a mid-term and a final) will be given. Specifics on the papers and exams will be provided later. In addition to these
items, you will be writing and submitting many response paragraphs, based on the reading assignments. Usually, before a class discussion meeting you will be asked to submit a written paragraph via courses@dordt. This 100-300 word paragraph is a reaction to the reading. These will be scored according the the rubric:

0 - no submission
1 – submission showing minimal understanding of the reading
2 – submission showing clear evidence of having read and understood the reading
3 – submission showing significant engagement with the material.

The reason for these paragraphs is two-fold. One, it is an encouragement for you to complete the readings and it will help you to be ready for discussion. Second, they will be read by the instructors before we meet and will help shape the direction of class discussion.

Course grades will be determined on the following weighting: 10% participation, 15% paragraphs, 15% for each paper, 20% for the midterm exam, and 25% for the final exam.

**Key Dates**
(instructors reserve the right to shift these if needed)
Feb 23 First paper due
Mar 4 Midterm exam
April 22 Second paper due
May 5 Final Exam: 10:30 am-12:30 pm

**Tentative course outline and reading assignments**
The instructors reserve the right to adjust this schedule when they think it is appropriate.

Introduction, 0.5 week
Overview of the relation of faith and science –1 wk
The nature of science – preface and Ch 1 Ratzch, 0.5 wk
Traditional views of science – Ch 2 Ratzch, 0.5 wk
Introduction to Kuhn – Ch 3 Ratzch and preface to Kuhn, 0.5 wk
The role of history and normal science – Ch 1 & 2 Kuhn, 1 wk
The nature and methods of normal science – Ch 3 & 4 Kuhn 1 wk
Paradigms, anomalies, and crisis - Ch 5-8 Kuhn 2 wks
The need for revolutions and revolutions as worldview changes – Ch 9 & 10 Kuhn, 1 wk
After the revolution – Ch 11 -13 and postscript, Kuhn, 1.5 wk
The contemporary situation – Ch 4 Ratzch, 0.5 wk
What can learn from science? – Ch 5 & 6 Ratzch 1 wk
Science challenges to belief – Ch 7 Ratzch, 0.5 wk
Design – Ch 8 Ratzch, 0.5 wk
Doing science as a Christian – Ch 9-10 and appendix Ratzch, 0.5 wk
A new framework for science – 2 wks