

FINAL REPORT

SCIENCE-FAITH COURSES
FOR SEMINARIES
MAY 2018

A PROJECT OF JOHN CARROLL UNIVERSITY FUNDED BY
THE JOHN TEMPLETON FOUNDATION AND OTHERS.

RE-ENGAGING
SCIENCE
IN SEMINARY
FORMATION

SEMINARIES PARTICIPATING IN THIS PROJECT

MAJOR UNITED STATES/ROMAN CATHOLIC SEMINARIES/THEOLOGATES

ATHENAEUM OF OHIO/MOUNT ST. MARY'S SEMINARY OF THE WEST

Cincinnati, Ohio • athenaeum.edu/Seminary

BOSTON COLLEGE SCHOOL OF THEOLOGY AND MINISTRY

Chestnut Hill, Massachusetts • bc.edu/schools/stm.html

DOMINICAN SCHOOL OF PHILOSOPHY & THEOLOGY

Berkeley, California • dspt.edu

HOLY APOSTLES COLLEGE AND SEMINARY

Cromwell, Connecticut • holyapostles.edu

IMMACULATE CONCEPTION SEMINARY

South Orange, New Jersey • shu.edu/theology

KENRICK-GLENNON SEMINARY

St. Louis, Missouri • kenrick.edu

MOUNT ANGEL SEMINARY

St. Benedict, Oregon • mountangelabbey.org/seminary

MOUNT ST. MARY'S SEMINARY

Emmitsburg, Maryland • msmary.edu/seminary

NOTRE DAME SEMINARY AND GRADUATE SCHOOL OF THEOLOGY

New Orleans, Louisiana • nds.edu

OBLATE SCHOOL OF THEOLOGY

San Antonio, Texas • ost.edu

SACRED HEART SEMINARY AND SCHOOL OF THEOLOGY

Hales Corners, Wisconsin • shsst.edu

SAINT CHARLES BORROMEO SEMINARY

Wynnewood, Pennsylvania • scs.edu

ST. JOHN VIANNEY THEOLOGICAL SEMINARY

Denver, Colorado • sjvdenver.edu

ST. JOHN'S SEMINARY

Camarillo, California • stjohnsem.edu

SAINT JOHN'S UNIVERSITY SCHOOL OF THEOLOGY AND SEMINARY

Collegeville, Minnesota • csbsju.edu/sot

ST. JOSEPH'S SEMINARY

Yonkers, New York • dunwoodie.edu

SAINT MARY SEMINARY AND GRADUATE SCHOOL OF THEOLOGY

Wickliffe, Ohio • stmarysem.edu

ST. MARY'S SEMINARY & UNIVERSITY

Baltimore, Maryland • stmarys.edu

ST. VINCENT DE PAUL REGIONAL SEMINARY

Boynton Beach, Florida • svdp.edu

UNIVERSITY OF SAINT MARY OF THE LAKE/MUNDELEIN SEMINARY

Mundelein, Illinois • usml.edu

COLLEGE SEMINARIES

BISHOP SIMON BRUTÉ COLLEGE SEMINARY

Indianapolis, Indiana • bishopsimonbrute.org

BORROMEO SEMINARY

Wickliffe, Ohio • borromeoseminary.org

ST. JOSEPH SEMINARY COLLEGE

St. Benedict, Louisiana • sjasc.edu

ST. PIUS X SEMINARY

Dubuque, Iowa • loras.edu/spiritual-life/st-pius

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CHALLENGE

RE-ENGAGING SCIENCE IN US-ROMAN CATHOLIC SEMINARY FORMATION

FAITH AND REASON

In 1998, Pope John Paul II published an encyclical letter titled *Fides et Ratio* (Faith and Reason) that had powerful influence on the perception of and intrinsic connection between faith and reason in the pursuit of truth. In the encyclical, the pope challenged bishops, as chief shepherds in dioceses around the world, to pursue and accept the truth embedded in the foundations of revelation and the discoveries of reason, which, of course, includes scientific enquiry. His letter was a reminder that the Catholic intellectual tradition has always seen Divine Revelation and scientific enquiry as essential co-partners in the pursuit of truth.

The pope did not mince words about the importance of that relationship:

"Faith and reason are like two wings on which the human spirit rises to the contemplation of truth; and God has placed in the human heart a desire to know the truth – in a word, to know himself –so that, by knowing and loving God, men and women may also come to the fullness of truth about themselves (cf. Ex 33:18; Ps 27:8-9; 63:2-3; Jn 14:8; 1Jn 3:2)."

- *Fides et Ratio*, Introduction

John Paul II suggested in his letter that in the end there could be no contradiction between the truths of faith and the truths of science, since truth cannot contradict itself. A theology that is *fides quaerens intellectum* (faith seeking understanding) is a theology that welcomes scientific pursuits as a partner in understanding the truth.

In another encyclical, *Pastores Dabo Vobis* (I Give You Pastors), on the renewal of seminary formation, John Paul II made it clear that scientific enquiry is an essential element of Catholic seminary formation for the ordained priesthood. That formation must include courses that prepared future priests to preach and teach in a context that is increasingly marked by science and technology and the big questions that are raised in that context for and by faithful believers.

"The challenge of the 'new evangelization' shows just how important this [intellectual] formation is... The present situation is heavily marked ...

by fresh problems and questions brought up by scientific and technological discoveries. It strongly demands a high level of intellectual formation, such as will enable priests to proclaim, in a context like this, the changeless Gospel of Christ and to make it credible to the legitimate demands of human reason." *Pastores Dabo Vobis*, 51

OUR INITIATIVE

Our initiative began with John Paul II's important insight that Catholics would be better served by clergy who were well prepared to help them address the big questions in science that were impacting their faith. The questions that Catholics were asking themselves about cosmology, genetics, evolution, creation, neuroscience, and the big bang were generally neglected in seminary curricula, and by extension, were rarely addressed in Catholic parishes. In fact, in 2014, a year before our initiative was launched, the Center for Applied Research in the Apostolate (C.A.R.A.) at Georgetown University illuminated the current status quo with a sobering statistic: among newly ordained priests, only around 8% had a strong academic background in science, and the average Roman Catholic seminary curriculum offered no courses in scientific literacy for those 92% who lacked such a background. The lacuna translated into a clergy that largely remained uninformed and limited in its ability to access and integrate science into their theology and pastoral practice.

What could be done to redress this lacuna?

Doris Donnelly, a professor of theology at John Carroll University (JCU) and convener of several international conferences for seminary personnel while directing The Cardinal Suenens Center at JCU, saw the deficit of science in seminary curricula as unsustainable — and fixable. In 2015, she, along with a team of current and former seminary rectors and administrators from the United States Conference of Catholic Bishops (USCCB), embarked on a three-year project to encourage development and delivery of full-fledged science courses into an already full seminary curriculum.



From left: Christopher Levenick (John Templeton Foundation), Rev. Thomas Dragga, Doris Donnelly, Archbishop Jorge Patrón Wong, Most Rev. W. Shawn McKnight, and Rev. Richard Benson, C.M.

The core team began with a survey of all US-Roman Catholic major and college seminaries to gauge perceptions and interest in science in their curricula. Team members Bishop W. Shawn McKnight, Monsignor Jeremiah McCarthy, Reverend Richard Benson, C.M., and Reverend Thomas Dragga followed up surveys with phone calls and/or visits to rectors at seminaries. Responses from seminary rectors and deans were overwhelmingly positive. We read and heard statements like “Count us in” and “Much needed; we are interested,” over and over again.

While seminary presidents and faculties shared the goal of increasing priests’ scientific literacy, the path seemed strewn with obstacles — especially finding time in an already crowded schedule to add another course to the curriculum.

The project director and core team, however, saw a potential opening. All major seminaries have pre-theology programs that provide training for roughly 80 percent of priest-candidates in the U.S. These two-year

programs have flexibility not currently available in the general major seminary curriculum. In 2014, Donnelly and a group of rectors shared the pre-theology idea with members of the Congregation for the Clergy, the Vatican office in charge of major seminary curriculum. The congregation was responsive and supportive, and the project was launched the following year.

Science courses are not yet the norm in every seminary, but interest is high and registrations are encouraging. Students have been as eager as their instructors to engage in topics related to their vocation and ministries. And, as it turned out, not just at the pre-theology level. Even with very full course loads, some students who are enrolled at the major seminary level are taking on extra credits, equipping them for what the Second Vatican Council called “the signs of the times.”



GOALS

RE-ENGAGING SCIENCE IN US-ROMAN CATHOLIC SEMINARY FORMATION

GOAL #1

TO INTRODUCE SCIENCE COURSES IN THE SEMINARY CURRICULUM

The first and primary goal of this effort was to influence seminary curriculum in a way that was reasonable, challenging, and sustainable by introducing courses in scientific literacy in pre-theology and college programs that would make a measurable difference for seminarians in their future theological studies as well as in their eventual pastoral ministries. This proposal provided a path that would result in a “systemic change” to current Catholic seminary formation by helping seminaries achieve a vision that had already been set for them by the magisterium. A scientifically literate priest, conversant with the scientific method, the philosophy of science, a general scientific vocabulary, and a familiarity with the basic content of the physical sciences, would be able to read scientific articles with understanding, evaluate information with a sufficient knowledge base, and engage in dialogue on science topics with increasingly informed congregations.

GOAL #2

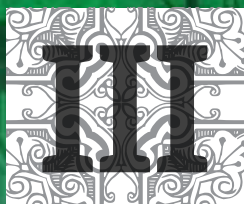
TO ENCOURAGE FACULTY DEVELOPMENT IN SCIENTIFIC LITERACY

Aware that one course alone, or even several courses, were not enough to permeate seminary culture, our second goal was to energize scientific literacy throughout the seminary community. Funding was available for faculty development events to engage the big questions — and smaller ones — in science. For the Planning Team of this initiative, what was important was that this initiative was not regarded as the province of the one, or few, who were teaching a science course.

FOR THE GOALS TO SUCCEED

We welcomed creativity in developing scientifically rigorous, pastorally applicable courses that engaged mind and spirit, that informed and inspired, and that generated enthusiasm for faculty and student conversations about science that dominate current discourse — so that a scientifically literate clergy would be able to serve the New Evangelization more effectively in a world where technology and science are “lingua franca.”

Student seminarians at Kenrick-Glennon Seminary, St. Louis, MO. Kenrick-Glennon was awarded two grants to two separate professors for their science courses.



ANNOUNCEMENT: GRANTS FOR SCIENCE COURSES

RE-ENGAGING SCIENCE IN US-ROMAN CATHOLIC SEMINARY FORMATION

Once our goals, staffing, and funding were set, we began implementing steps that were crucial for the success of this initiative:

- 1) To optimize interest and delivery of 30 full-fledged two- and three-credit science courses in seminary curricula during the course of our grant, it was necessary for every rector, dean, and faculty member at US-Roman Catholic seminaries to be aware of the \$10K science course grants we were able to offer. We sent information in multiple forms — via regular mail and email, by phone, and when convenient, in person. Our plan was to grant 15 \$10K awards in 2016 and 15 \$10K awards in 2017.
 - a) An eight-panel, four-color brochure “announcing” the opportunity to apply for \$10K grants to develop and deliver a science course was sent to all constituencies by mail.
 - b) Application forms for grants were sent to each individual rector, dean, and faculty member by email.
 - c) Every faculty member and every administrator at every US-RC seminary received follow-up notice thrice, with an invitation to participate in science course development. Local bishops were informed of the opportunity by USPS mail. Several bishops encouraged seminaries in their jurisdictions to apply for grants.
 - d) Rev. Richard Benson, C.M., provided information about the project at the National Association of Catholic Theology Schools (NACTS) meeting of seminary personnel in Chicago in October 2015. We were encouraged to hear that his five-minute time slot expanded to 45 minutes due to questions and positive interest from seminary rectors, deans, and faculty members.
- 2) In 2015, we received 28 pre-proposals and moved 23 to the full proposal stage. Of the 18 full proposals received, 15 were each awarded \$10,000.
- 3) In 2016, we received 20 proposals, moved all to the full proposal stage, and awarded 15 grants at \$10,000 each.
- 4) We sent a list of awardees to national Catholic magazines and sent a copy of the list to every US bishop.
- 5) We invited all 2015 grantees and their rector or dean to Tucson for a conference where expectations for science courses would be set in the presence and support from scientists.

CONTEMPORARY PHILOSOPHICAL SPECULATION MUST ALSO BE TAKEN INTO ACCOUNT — ESPECIALLY THOSE ASPECTS THAT EXERT A MAJOR INFLUENCE IN ONE'S OWN COUNTRY — ALONG WITH THE PROGRESS OF MODERN SCIENCES, SO THAT SEMINARIANS CAN BE ADEQUATELY PREPARED FOR DIALOGUE WITH OTHERS, BY BEING PROPERLY AWARE OF THE SALIENT TRENDS IN SOCIETY.

The Gift of Priestly Formation
Ratio Fundamentalis Institutionis
Sacerdotalis (2016) ¶159

SCIENCE IN SEMINARIES

\$10,000 AWARDS

2015 COURSE AWARDS

Darwin and Naturalism

Mount St. Mary's Seminary, Emmitsburg, Maryland
Christopher Anadale, Ph.D.

The Emergence of the Image: Human Evolution from Biological, Philosophical and Theological Perspectives

Notre Dame Seminary and Graduate School of
Theology, New Orleans, Louisiana
Christopher T. Baglow, Ph.D.

Only Wonder Comprehends

Athenaeum of Ohio/Mount St. Mary's Seminary
of the West, Cincinnati, Ohio
Marco Caggioni, Ph.D., Rev. Earl K. Fernandes,
S.T.D., & Simona Ferioli, M.D.

Theology of Marriage and Human Sexuality

St. John's Seminary, Camarillo, California
Rev. Luke Dysinger, O.S.B., D. Phil., M.D.

Catholicism in an Evolving World

Oblate School of Theology, San Antonio, Texas
Sr. Linda Gibler, O.P., Ph.D. and
R. Scott Woodward, D. Min

Integral Anthropology: Evolution in Dialogue with Catholic Theology and Philosophy

St. Joseph Seminary College,
St. Benedict, Louisiana
Cory Hayes, Ph.D.

Science and Theology: In Dialogue for the New Evangelization

Kenrick-Glennon Seminary, St. Louis, Missouri
Edward P. Hogan, Ph.D.

The Transfigured Brain: The Relationship between Brain Science, Ritual and Mysticism

Saint Mary Seminary and Graduate School of
Theology, Wickliffe, Ohio
Edward Kaczuk, Ph.D., and Rev. Michael G. Woost, S.T.L.

Fundamentals of Science at the Foundations of Faith

University of Saint Mary of the Lake/ Mundelein
Seminary, Mundelein, Illinois
Rev. John Kartje, Ph.D., S.T.D.

Creation and Science

Immaculate Conception Seminary,
South Orange, New Jersey
Rev. Joseph R. Laracy, S.T.L.

Science: A Theology of Creation

Mount Angel Seminary, St. Benedict, Oregon
Bro. Louis de Montfort Nguyen, O.S.B., M.D.

What Does Science Prove? Topics at the Intersection of Science and Religion

Borromeo Seminary, Wickliffe, Ohio
Beth Rath, Ph.D.

Liturgical Piety: Anthropological Foundations of Catholic Worship

Dominican School of Philosophy & Theology,
Berkeley, California
Rev. Christopher J. Renz, O.P., Ph.D.

Science in the Light of Faith

Holy Apostles College and Seminary, Cromwell, Connecticut
Stacy Trasancos, Ph.D.

Human Genetics and Biotechnologies: Challenges for Science and Religion

Boston College School of Theology and Ministry,
Chestnut Hill, Massachusetts
Rev. Andrea Vicini, S.J., M.D., Ph.D.

"The present situation is heavily marked ... by fresh problems and questions brought up by scientific and technological discoveries. It strongly demands a high level of intellectual formation, such as will enable priests to proclaim, in a context like this, the changeless Gospel of Christ and make it credible to the legitimate demands of human reason." - Pastores Dabo Vobis, #51

2016 COURSE AWARDS

Behavioral Ecology

Bishop Simon Bruté College Seminary,
Indianapolis, Indiana
David Benson, Ph.D. & Mark Reasoner, Ph.D.

Science and Theology of Food

Immaculate Conception Seminary School
of Theology, South Orange, New Jersey
Rev. Gerald J. Buonopane, Ph.D.

Cosmos & Creation: Perspectives on Scientific Discoveries and the Intelligibility of Human Experience

Saint Charles Borromeo Seminary,
Wynnewood, Pennsylvania
James M. Despres, Ph.D. (Cand.)

Virtues, Vices, and Addictions

St. John's Seminary, Camarillo, California
Rev. Luke Dysinger, O.S.B., D. Phil., M.D.

Statistics and the New Evangelization

Mount St. Mary's Seminary, Emmitsburg, Maryland
Layton Field, Ph.D. & John D. Love, S.T.D.

Man and Woman He Created Them: What Science Tells Us about Gender

Kenrick-Glennon Seminary, St. Louis, Missouri
John D. Finley, Ph.D.

Stress & Resiliency: Scientific and Pastoral Approaches

St. Mary's Seminary & University, Baltimore, Maryland
Patricia Fosarelli, M.D.

Divine Action in the Natural World

St. Joseph's Seminary, Yonkers, New York
Michael A. Hoonhout, Ph.D.

Science, Faith, and Knowledge

St. Pius X Seminary, Dubuque, Iowa
Jacob Kohlhaas, Ph.D. &
Christoffer Lammer-Heindel, Ph.D.

Theology and Scientific Methodology

St. Vincent de Paul Regional Seminary,
Boynton Beach, Florida
Antonio Lopez, Ph.D.

Cosmology: Scientific, Philosophical, and Theological

St. John Vianney Theological Seminary,
Denver, Colorado
Thomas McLaughlin, Ph.D. & Joel Barstad, Ph.D.

In the Image of God: Toward an Adequate Anthropology of the Person as the Image of the Divine

Mount Angel Seminary, St. Benedict, Oregon
Br. Louis de Montfort Nguyen, O.S.B., M.D.

What Is a Human Being? Evolution's Gift to Theology for Responding to this Question

Saint John's University School of Theology and
Seminary, Collegeville, Minnesota
Vincent M. Smiles, Ph.D.

Science of Forgiveness

Sacred Heart Seminary and School of Theology,
Hales Corners, Wisconsin
James Stroud, S.T.D.

Can the Mind Be Reduced to the Brain?

Dominican School of Philosophy & Theology,
Berkeley, California
Marga Vega, Ph.D.



GATHERING GRANTEES IN TUCSON

RE-ENGAGING SCIENCE IN US-ROMAN
CATHOLIC SEMINARY FORMATION

CONFERENCE AT REDEMPTORIST RENEWAL CENTER, TUCSON, ARIZONA
JANUARY 28–FEBRUARY 1, 2016

Rectors or academic deans and faculty authors of the most promising projects of the 2015 Competition were invited to a conference in Tucson, Arizona, the home of the Vatican Observatory, the flagship astronomical research center of the Roman Catholic Church. We met at the Redemptorist Retreat Center.

The gathering provided key seminary personnel with the opportunity to meet each other, exchange ideas, plans, resources, and conversation with peers — possibly for the first time — on issues surrounding the integration of science into seminary curricula. Focused input (and inspiration) was provided by scientists, theologians, and educational specialists who were also available to assist grantees in the development of their courses. A workshop specifically designed for rectors/deans was also scheduled to assist in the critical work of cultivating interest in the courses to ensure maximum enrollment.

Speakers were chosen because of expertise in their fields, their ability to make intriguing material accessible to other teachers, and their comfort level dialoguing with specialists in other fields. They included: Richard Benson, C.M. (former Academic Dean, St. John's Seminary, Camarillo, CA), Nancy Bonini (neuroscientist, University of Pennsylvania), Rev. Michael Himes (ecclesiologist, Boston College), Agustín Fuentes (anthropologist, University of Notre Dame), Guy Consolmagno (astronomer, Vatican Observatory), Katarina Schuth, O.S.F. (sociologist, University of St. Thomas, MN), and Jennifer Wiseman (Project Director, DoSER at AAAS, Washington, D.C.). Mini-presentations were provided on two influential RC priest-scientists: George Lemaître by Rev. John Kartje and on Gregor Mendel by Rev. Andrea Vicini, S.J. (Reverends Kartje and Vicini are recipients of science course grants.) Logistics were in place at the Desert Renewal Center in Tucson and at the Flandrau Science Center and Planetarium in Tucson, where the Vatican Observatory received the “Living Water” Award (\$10K) from the Cardinal Suenens Center.

Video recordings of major presentations are available until 2020

semscience.net/tucsonpresentations

Discussion guides for major presentations are available until 2020

semscience.net/discussionguides

Video recordings of reflections from major presenters and participants are available until 2020

semscience.net/tucsonreflections

MAJOR CONFERENCE SPEAKERS



Rev. Richard Benson, C.M., Ph.D.
DePaul University



Nancy M. Bonini, Ph.D.
University of Pennsylvania



Guy Consolmagno, S.J., Ph.D.
Vatican Observatory



Agustín Fuentes, Ph.D.
University of Notre Dame



Rev. Michael Himes, Ph.D.
Boston College



Sr. Katarina Schuth, O.S.F., Ph.D.
St. Thomas University



Jennifer Wiseman, Ph.D.
Association for the Advancement of Science

TUCSON SPEAKERS' BIOGRAPHIES

Richard Benson, C.M., Ph.D.

DePaul University, Chicago, Illinois

Father Richard Benson, a member of the Congregation of Mission (Vincentians), has been engaged in seminary formation in the US and Africa (Kenya) for most of his ministry. He holds an MA in biological sciences, and his doctoral research at the University of Louvain, where he earned both the PhD and STD, also incorporated his interest and expertise in scientific topics. As Academic Dean at Saint John's Seminary in Camarillo (1994-2010), Father Benson was the point person for the development of major grants, including one from the Lilly Endowment. Highly respected as a leader in seminary formation, he was singled out by the Carnegie Foundation for an excellent model of pedagogy for seminarians. He is currently on faculty at DePaul University.

Nancy Bonini, Ph.D.

University of Pennsylvania, Philadelphia, Pennsylvania

For most of us fruit flies are a tiny nuisance, but the research of Professor Nancy Bonini, professor of biology at the University of Pennsylvania, reveals these pests as offering major insights into some of the most vexing human illnesses. Professor Bonini's lab uses *Drosophila melanogaster*, the common fruit fly, to study the mechanisms of human neurodegenerative diseases such as Huntington's, Parkinson's, Alzheimer's, and ALS. Her research has appeared in numerous scholarly publications. As a neuroscientist, she has been a guest on the Charlie Rose program's brain series, and in 2012 she was elected as a member of the National Academy of Sciences, among the highest honors accorded to U.S. scientists. Dr. Bonini holds degrees from Princeton University and the University of Wisconsin-Madison.

Guy Consolmagno, S.J., Ph.D.

Vatican Observatory, Castel Gandolfo (Italy) & Tucson, Arizona

Brother Guy Consolmagno, a Jesuit, is Director of the Vatican Observatory, and President of the Vatican Observatory Foundation. He holds an MA from MIT and a PhD from the University of Arizona, both in planetary science. An asteroid was named in his honor in 2000: 4597 Consolmagno. The co-author of more than 200 scientific papers and six popular books, Brother Consolmagno has appeared on The Colbert Report and in many other media. In 2014, he was awarded the Carl Sagan Medal for outstanding communication by an active planetary scientist to the general public, an honor bestowed by the American Astronomical Society. He also served in the Peace Corps, teaching physics and astronomy in Kenya.

Agustín Fuentes, Ph.D.

University of Notre Dame, South Bend, Indiana

To shed light on common misconceptions about human behavior, especially in the areas of race, sex, and aggression, anthropologist Agustín Fuentes spends his time observing monkeys which, in turn, is another way of saying that he is observing us. Professor Fuentes is a professor at and chairperson in the Department of Anthropology at the University of Notre Dame, where his research on human and

non-human primate interaction has enlivened the fields of social evolution, biological anthropology, and primatology. In addition to his scholarly publications, Professor Fuentes blogs at The Huffington Post and Psychology Today, "busting myths" about human nature. He is a featured explorer of the National Geographic Society and has been a guest on National Geographic Radio. He holds degrees from the University of California, Berkeley.

Michael Himes, Ph.D.

Boston College, Chestnut Hill, Massachusetts

Father Michael Himes, a priest of the Diocese of Brooklyn, New York, and a professor of theology at Boston College, holds two gifts in uncommon balance – the rigor of the committed scholar (PhD University of Chicago) and the rare ability to make heavy duty erudition accessible and inviting to many. A pre-eminent ecclesiologist with a focus on nineteenth century Catholicism and its influence on public theology and the current rise of humanistic atheism, Father Himes' intellectual range has established him as a sought-after partner in interdisciplinary dialogue. Honored by the academy with multiple awards for his books, Father Himes received Outstanding Teaching awards from students at Notre Dame and Boston College.

Sister Katarina Schuth, O.S.F., Ph.D.

St. Thomas University, Minnesota

Sister Katarina Schuth, a member of the Sisters of St. Francis and an internationally-recognized expert on seminary education, is at the forefront of conversations about the changing nature of the priesthood in the United States. A scholar of both pastoral theology and sociology of religion, Dr. Schuth has authored five books and more than fifty articles treating the subjects of liturgical formation, lay ministry, changes in seminary education following the sexual abuse crisis, multiple-parish ministry, and more. Her encyclopedic knowledge of seminaries, their histories, students, faculties, courses of instruction, growth and decline is legendary. In 2008, she was named Professor of the Year at the University of St. Thomas, where she has taught since 1991.

Jennifer Wiseman, Ph.D.

American Association for the Advancement of Science, Washington, D.C.

Dr. Jennifer Wiseman grew up looking at the sky from a farm in the Ozark Mountains, and she hasn't stopped since. As an undergraduate at MIT, Dr. Wiseman discovered the comet 114P Wiseman-Skiff. A PhD in astronomy followed from Harvard. She studies the formation of stars and planets in interstellar cloud using a variety of telescopes. Currently she is a senior astrophysicist at the NASA Goddard Space Flight Center and the Senior Project Scientist for the Hubble Space Telescope. She also serves as the director of the American Association for the Advancement of Science's Dialogue on Science, Ethics, and Religion, fostering communication and improving understanding between scientific and religious communities. She is an unusually credible and articulate spokesperson on – and witness to – the possibility of being a person of faith and a scientist at the same time.



CONGREGATIO
PRO CLERICIS

Vatican City, 21 December 2015

Prot. N. 20153625

Dr. Doris Donnelly
John Carroll University
1 John Carroll Boulevard
University Heights, OH 44118-4581
UNITED STATES OF AMERICA

Dear Doctor Donnelly,

On behalf of His Eminence Cardinal Stella, and in my own name, I would like to extend a welcome to all of the participants in the upcoming *Science in Seminaries* gathering to be held in Tuscon, Arizona from 28 January to 1 February 2016.

The project which you are undertaking, with the help of the Templeton Foundation, to encourage scientific literacy in Roman Catholic theologates is of profound importance in the effort to form priests who are able to enter into dialogue with the contemporary society of the twenty-first century. I was pleased to hear that so many of the seminaries which were contacted have chosen to participate in *Science in Seminaries*, and I am happy to encourage even more to do so.

Due to commitments here in Rome, it is not possible to attend the gathering in Tuscon. Nonetheless, I would like to assure you of my support for your project, and Cardinal Stella's as well, and I look forward to hearing of your future progress.

Grateful for your collaboration, I assure you of my prayers and best wishes, and I remain,

Sincerely yours in Christ,

✠ Jorge Carlos Patrón Wong
Archbishop, Bishop Emeritus of Papantla
Secretary for Seminaries

NEW SCIENCE COURSES OFFERED BY STATE

41 SCIENCE COURSES

Just how deep is the interest in developing full-fledged science courses in an already crowded curriculum at US-Roman Catholic seminaries?

We learned it was a few fathoms deeper than we thought. The response to our invitation to design, develop, and deliver science courses over a three-year period resulted in 30 new courses with 11 taught for a second or third time. The final number: 41 courses have been taught during the course of our three-year project.

Of special interest has been the number of faculty at seminaries who hold degrees in science and now are able to teach their combined fields of specialization — theology and science and philosophy and science. Information about particular courses, their instructors, and their degrees may be found on the following pages.

So far, eight courses are officially on seminary schedules after this grant closes. Six more are in the offing to be offered in 2020 and following. That's an additional total of 14 courses that are expected to be taught after our grant concludes. Interest and investment in courses has been heartening. And real.

With focused announcements, good time scheduling, and accurate and timely publicity, courses have gotten off the ground with good enrollments. Moreover, the quality of the courses as evidenced by assessments by professors, students, and external evaluators has been exemplary.

Fully conscious that there is still room to improve, to grow, to increase the number of courses and the number of students taking them, the Core Team of this project is pleased with the accomplishments of so many seminaries, so many courses, so much interest. The result was far more than we expected. Or thought possible.

CALIFORNIA

Dominican School of Philosophy & Theology, Berkeley, California

St. John's Seminary
Camarillo, California

COLORADO

St. John Vianney Theological Seminary, Denver, Colorado

CONNECTICUT

Holy Apostles College and Seminary, Cromwell, Connecticut

FLORIDA

St. Vincent de Paul Regional Seminary, Boynton Beach, Florida

ILLINOIS

University of Saint Mary of the Lake/ Mundelein Seminary, Mundelein, Illinois

INDIANA

Bishop Simon Bruté College Seminary, Indianapolis, Indiana

IOWA

St. Pius X Seminary
Dubuque, Iowa

LOUISIANA

Notre Dame Seminary and Graduate School of Theology
New Orleans, Louisiana

St. Joseph Seminary College,
St. Benedict, Louisiana

MARYLAND

Mount St. Mary's Seminary,
Emmitsburg, Maryland

St. Mary's Seminary & University,
Baltimore, Maryland

MASSACHUSETTS

Boston College School of Theology and Ministry
Chestnut Hill, Massachusetts

MINNESOTA

Saint John's University School of Theology and Seminary,
Collegeville, Minnesota

MISSOURI

Kenrick-Glennon Seminary
St. Louis, Missouri

NEW JERSEY

Immaculate Conception Seminary School of Theology,
South Orange, New Jersey

NEW YORK

St. Joseph's Seminary
Yonkers, New York

PENNSYLVANIA

Saint Charles Borromeo Seminary
Wynnewood, Pennsylvania

OHIO

Athenaeum of Ohio/Mount
St. Mary's Seminary of the West
Cincinnati, Ohio

Borromeo Seminary
Wickliffe, Ohio

Saint Mary Seminary and Graduate
School of Theology, Wickliffe, Ohio

OREGON

Mount Angel Seminary
St. Benedict, Oregon

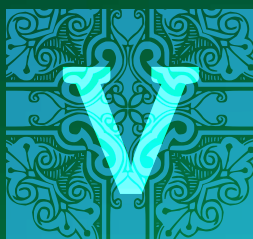
TEXAS

Oblate School of Theology,
San Antonio, Texas

WISCONSIN

Sacred Heart Seminary and
School of Theology
Hales Corners, Wisconsin





NEW SCIENCE COURSES OFFERED BY DATE WITH INSTRUCTORS

RE-ENGAGING SCIENCE IN US-ROMAN CATHOLIC SEMINARY FORMATION

FORTY-ONE COURSES HAVE BEEN OFFERED DURING THE THREE-YEAR GRANT

SPRING 2016 THROUGH SPRING 2018

THE GRANT CLOSED ON MAY 31, 2018

AN ADDITIONAL EIGHT COURSES ARE SCHEDULED WITH MORE IN THE PLANNING STAGE TO BE REPEATED AFTER THE GRANT CLOSED.

COURSES OFFERED SPRING 2016

The Transfigured Brain: The Relationship between Brain Science, Ritual and Mysticism

Saint Mary Seminary and Graduate School of Theology, Wickliffe, OH
Edward Kaczuk, Ph.D. Music Theory & Composition (Kent State University)
Rev. Michael G. Woost, S.T.L. Theology (Catholic University of America)

Creation and Science

Immaculate Conception Seminary, South Orange, NJ
Rev. Joseph R. Laracy, S.M. Engineering Systems (Massachusetts Institute of Technology), S.T.L. Theology (Pontifical Gregorian University)

****The Transfigured Brain: The Relationship between Brain Science, Ritual and Mysticism**

Saint Mary Seminary and Graduate School of Theology, Wickliffe, OH

****Creation and Science**

Immaculate Conception Seminary, South Orange, NJ

Science: A Theology of Creation

Mount Angel Seminary, St. Benedict, OR
Br. Louis de Montfort Nguyen, O.S.B., M.D. (University of California, Davis)

What Does Science Prove? Topics at the Intersection of Science and Religion

Borromeo Seminary, Wickliffe, OH
Beth Rath, Ph.D. Philosophy (St. Louis University)

Statistics and the New Evangelization

Mount St. Mary's Seminary, Emmitsburg, MD
Layton Field, Ph.D. Sociology (Texas A&M)
John D. Love, Ph.D. Theology (Pontifical University of St. Thomas Aquinas, Rome)

Fundamentals of Science at the Foundations of Faith

University of Saint Mary of the Lake / Mundelein Seminary, Mundelein, IL
Rev. John Kartje, Ph.D. Astronomy and Astrophysics (University of Chicago), S.T.D. (Catholic University of America)

Liturgical Piety: Anthropological Foundations of Catholic Worship

Dominican School of Philosophy & Theology, Berkeley, CA
Rev. Christopher J. Renz, O.P., Ph.D. Microbiology-Immunology (Northwestern University), M.A. Theology (Graduate Theological Union, Berkeley, CA)

COURSES OFFERED FALL 2016

Darwin and Naturalism

Mount St. Mary's Seminary, Emmitsburg, MD
Christopher Anadale, Ph.D. Philosophy (Emory University)

Theology of Marriage and Human Sexuality

St. John's Seminary, Camarillo, CA
Rev. Luke Dysinger, O.S.B., D. Phil. Theology (Oxford University), M.D. (University of Southern California)

Catholicism in an Evolving World

Oblate School of Theology, San Antonio, TX
Sr. Linda Gibler, O.P., Ph.D., Philosophy and Religion (California Institute of Integral Studies - CIIS)
Scott Woodward, D. Min. Theology (Oblate School of Theology)

Integral Anthropology: Evolution in Dialogue with Catholic Theology and Philosophy

St. Joseph Seminary College, St. Benedict, LA
Cory Hayes, Ph.D. Theology (Duquesne University)

COURSES OFFERED SPRING 2017

The Emergence of the Image: Human Evolution from Biological, Philosophical and Theological Perspectives

Notre Dame Seminary and Graduate School of Theology, New Orleans, LA
Christopher T. Baglow, Ph.D. Theology (Duquesne University)

Only Wonder Comprehends

Athenaeum of Ohio/Mount St. Mary's Seminary of the West, Cincinnati, OH
Marco Caggioni, Ph.D. Physics (Harvard University)
Giorgio Ambrosio, Ph.D. Applied Science (at Fermilab, Chicago)
Deacon Tracy W. Jamison, Ph.D. Philosophy (University of Cincinnati)

Virtues, Vices and Addiction

St. John's Seminary, Camarillo, CA
Rev. Luke Dysinger, O.S.B., D. Phil. Theology (Oxford University), M.D. (University of Southern California)

Science in the Light of Faith

Holy Apostles College and Seminary, Cromwell, CT
Stacy Trasancos, Ph.D. Chemistry (Pennsylvania State University), M.A. Theology (Holy Apostles College and Seminary)

Human Genetics and Biotechnologies: Challenges for Science and Religion

Boston College School of Theology and Ministry, Chestnut Hill, MA
Rev. Andrea Vicini, S.J., M.D. (University of Bologna), Ph.D. Theological Ethics (Boston College)

COURSE OFFERED SUMMER 2017

*****Creation and Science**

Immaculate Conception Seminary School of Theology, South Orange, NJ

COURSES OFFERED FALL 2017

Science and Theology of Food

Immaculate Conception Seminary School of Theology, South Orange, NJ
Rev. Gerald Buonopane, Ph.D. Food Science (Pennsylvania State University)

Cosmos and Creation: Perspectives on Scientific Discoveries and the Intelligibility of Human Experience

Saint Charles Borromeo Seminary, Wynnewood, PA
James Despres, Ph.D. (ABD) Philosophy (Catholic University of America)

**Theology of Marriage and Human Sexuality

St. John's Seminary, Camarillo, CA

Stress & Resiliency: Scientific and Pastoral Approaches

St. Mary's Seminary & University, Baltimore, MD
Patricia Fosarelli, M.D. (University of Maryland School of Medicine), D.Min. Spirituality (Wesley Theological Seminary, Washington, D.C.)

Science and Theology: In Dialogue for the New Evangelization

Kenrick-Glennon Seminary, St. Louis, MO
Edward Hogan, Ph.D. Systematic Theology (Boston College)

***The Transfigured Brain: The Relationship between Brain Science, Ritual and Mysticism

Saint Mary Seminary and Graduate School of Theology, Wickliffe, OH

Science, Faith and Knowledge

St. Pius X Seminary, Dubuque, IA
Jacob Kohlhaas, Ph.D. Theology (Duquesne University)
Christoffer Lammer-Heindel, Ph.D. Philosophy (University of Iowa)

Theology and Scientific Methodology

St. Vincent de Paul Regional Seminary, Boynton Beach, FL
Antonio Lopez, Ph.D. Philosophy (Fordham University)

**Science: A Theology of Creation

Mount Angel Seminary, St. Benedict, OR

**What Does Science Prove? Topics at the Intersection of Science and Religion

Borromeo Seminary, Wickliffe, OH

What is a Human Being? Evolution's Gift to Theology for Responding to this Question

Saint John's University School of Theology and Seminary, Collegeville, Minnesota
Vincent M. Smiles, Ph.D. Theology (Fordham University)

Science and Forgiveness

Sacred Heart Seminary and School of Theology, Hales Corners, WI
James Stroud, S.T.D. Moral Theology and Ethics (Catholic University of America)
Jeremy W. Blackwood, Ph.D. Religious Studies (Marquette University)
Brian Yong Lee, Ph.D. Theology (University of Notre Dame)
Patrick J. Russell, Ph.D. Religious Studies (Marquette University)

Can the Mind be Reduced the Brain?

Dominican School of Philosophy and Theology, Berkeley, CA
Marga Vega, Ph.D. (Universidad de Valladolid)

COURSES SCHEDULED SPRING 2018

**Darwin and Naturalism

Mount St. Mary's Seminary, Emmitsburg, MD
Christopher Anadale, Ph.D. Philosophy (Emory University)

**The Emergence of the Image: Human Evolution from Biological, Philosophical and Theological Perspectives

Notre Dame Seminary and Graduate School of Theology, New Orleans, LA

Behavioral Ecology

Bishop Simon Bruté College Seminary, Indianapolis, IN
David Benson, Ph.D. Zoology (Washington State University)
Mark Reasoner, Ph.D. New Testament & Early Christian Literature (University of Chicago)

Man and Woman He Created Them: What Science Tells Us about Gender

Kenrick-Glennon Seminary, St. Louis, MO
John D. Finley, Ph.D. Philosophy (University of Dallas)

**Integral Anthropology: Evolution in Dialogue with Catholic Theology and Philosophy

St. Joseph Seminary College, St. Benedict, LA

Divine Action in the Natural World

St. Joseph's Seminary, Yonkers, NY
Michael A. Hoonhout, Ph.D. Systematic Theology (Boston College)

**Fundamentals of Science at the Foundations of Faith

University of Saint Mary of the Lake / Mundelein Seminary, Mundelein, IL

Cosmology: Scientific, Philosophical and Theological

St. John Vianney Theological Seminary, Denver, CO
Thomas McLaughlin, Ph.D. Philosophy (University of St. Thomas, Houston)

Joel Barstad, Ph.D. Medieval Institute (University of Notre Dame)

In the Image of God: Toward an Adequate Anthropology of the Person as the Image of the Divine

Mount Angel Seminary, St. Benedict, OR
Br. Louis de Montfort Nguyen, O.S.B., M.D. (University of California, Davis)

COURSES SCHEDULED FALL 2018

***Theology of Marriage and Human Sexuality

St. John's Seminary, Camarillo, CA

**Science in the Light of Faith

Holy Apostles College and Seminary, Cromwell, CT

COURSES SCHEDULED SPRING 2019

**Virtues, Vices and Addiction

St. John's Seminary, Camarillo, CA

***Statistics and the New Evangelization

Mount St. Mary's Seminary, Emmitsburg, MD

**Only Wonder Comprehends

Athenaeum of Ohio/Mount St. Mary's Seminary of the West, Cincinnati, OH

**Human Genetics and Biotechnologies: Challenges for Science and Religion

Boston College School of Theology and Ministry, Chestnut Hill, MA

COURSES SCHEDULED FOR EITHER FALL 2018 OR SPRING 2019

**Catholicism in an Evolving World

Oblate School of Theology, San Antonio, TX

**Liturgical Piety: Anthropological Foundations of Catholic Worship

Dominican School of Philosophy and Theology, Berkeley, CA

** course repeated second time

*** course repeated third time



CHURCH DOCUMENTS: THE IMPORTANCE OF SCIENCE

RE-ENGAGING SCIENCE IN US-ROMAN CATHOLIC SEMINARY FORMATION

As far back as the Fourth Century, the Catholic Church has been genuinely open to and supportive of scientific enquiry. Augustine, for example, spoke of the necessity of reading the “two books of scripture,” the “written Bible” and the “book of creation.” The tradition of seeking God and the truth of God written in Scripture and in the universe is echoed in strains of Catholic spirituality and in our long commitment to the scholastic synthesis, which included natural philosophy as a part of ecclesiastical education from the Middle Ages on.

We are also aware that there existed an unfortunate divorce between the previously very comfortable and compatible marriage of natural philosophy and theology sometime during the Counter Reformation when, perhaps in response to the reformers, and our focus on “sola scriptura,” Catholic theological training and priestly formation began to use, almost exclusively, the new “manuals” that presented philosophy and theology in a more digested form that rarely included any natural theology.

Yet it is also true that the love of the second book of revelation, creation, was never entirely lost or abandoned by the Church. And the good news is that the Roman Catholic Church has a renewed, expansive vision that sees not only the value of the positive and social sciences as a legitimate but also a necessary part of seminary formation. Documents from the Second Vatican Council (1962-1965), along with individual writings of recent popes, provide a clear mandate for seminaries to include science in their curricula to prepare their men for ordination. We have selected in the following pages statements from a few of the most recent documents that are of particular interest.

Optatam Totius

Decree on Priestly Formation (1965)

Gaudium et Spes

Pastoral Constitution on the Church in the Modern World (1965)

Istruzione Sulla Formazione Liturgica nei Seminari (1979)

Ratio Fundamentalis

Institutionis Sacerdotalis (1985)

Pastores Dabo Vobis

Apostolic Exhortation on the Formation of Priests in the Present Day (1992)

Fides et Ratio

On the Relationship between Faith and Reason (1998)

Program of Priestly Formation

Fifth Edition (2006)

Evangelii Gaudium

On the Proclamation of the Gospel in Today's World (2013)

Ratio Fundamentalis

Institutionis Sacerdotalis

The Gift of Priestly Formation (2016)

Directory for the Ministry and the Life of Priests (2016)

Decree on Priestly Training

OPTATAM TOTIUS (1965)

PROCLAIMED BY HIS HOLINESS, POPE PAUL VI

4. Let them be readied for the ministry of shepherd.
.... Every program of instruction...should be joined with practical implementation and directed toward the aforementioned pastoral goal.

13. Before seminarians take up those sacred studies which are properly ecclesiastical, they should be equipped with the humanistic and **scientific training** which in their own countries enables young people to undertake higher studies.

15. Basing themselves on a philosophic heritage which is perennially valid, students should also be conversant with contemporary philosophical investigations, especially those exercising special influence in their own county, **and with recent scientific progress.**

16. Special attention needs to be given to the development of moral theology. Its scientific exposition should be more thoroughly nourished by scriptural teaching. It should show the nobility of the Christian vocation for the faithful, and their obligation to bring forth fruit in charity for the life of the world. ...

17.excessive multiplying of subjects and classes is to be avoided. Those questions should be omitted which retain scarcely any significance, or which should be left for higher academic studies.

Español

13. Antes de que los seminaristas emprendan los estudios propiamente eclesiásticos, deben poseer **una formación humanística y científica** semejante a la que necesitan los jóvenes de su nación para iniciar los estudios superiores, y deben, además adquirir tal conocimiento de la lengua latina que puedan entender y usar las fuentes de muchas ciencias y los documentos de la Iglesia.

15. Las disciplina filosóficas hay que enseñarlas de suerte que los alumnos se vean como llevados de la mano ante todo a un conocimiento sólido y coherente del hombre, del mundo y de Dios apoyados en **el patrimonio filosófico siempre válido, teniendo también en cuenta las investigaciones filosóficas de los tiempos modernos sobre todo las que influyen más en la propia nación, y del progreso más reciente de las ciencias**, de forma que los alumnos, bien conocida la índole de la época presente, se preparen oportunamente para el diálogo con los hombres de su tiempo.

Full text at bit.ly/optatamtotius



Pastoral Constitution on the Church in the Modern World

GAUDIUM ET SPES (1965) PROMULGATED BY HIS HOLINESS, POPE PAUL VI

62. **Let those who teach theology in seminaries and universities strive to collaborate with men versed in the other sciences through a sharing of their resources and points of view. Theological inquiry should pursue a profound understanding of revealed truth; at the same time it should not neglect close contact with its own time that it may be able to help these men skilled in various disciplines to attain to a better understanding of the faith.** This common effort will greatly aid the formation of priests, who will be able to present to our contemporaries the doctrine of the Church concerning God, man and the world, in a manner more adapted to them so that they may receive it more willingly. Furthermore, it is to be hoped that many of the laity will receive a sufficient formation in the sacred sciences and that some will dedicate themselves professionally to these studies, developing and deepening them by their own labors. In order that they may fulfill their function, let it be recognized that all the faithful, whether clerics or laity, possess a lawful freedom of inquiry, freedom of thought and of expressing their mind with humility and fortitude in those matters on which they enjoy competence.

Español

62. **Los que se dedican a las ciencias teológicas en los seminarios y universidades, empuñense en colaborar con los hombres versados en las otras materias, poniendo en común sus energías y puntos de vista. la investigación teológica siga profundizando en la verdad revelada sin perder contacto con su tiempo, a fin de facilitar a los hombres cultos en los diversos ramos del saber un más pleno conocimiento de la fe.** Esta colaboración será muy provechosa para la formación de los ministros sagrados, quienes podrán presentar a nuestros contemporáneos la doctrina de la Iglesia acerca de Dios, del hombre y del mundo, de forma más adaptada al hombre contemporáneo y a la vez más gustosamente aceptable por parte de ellos. Más aún, es de desear que numerosos laicos reciban una buena formación en las ciencias sagradas, y que no pocos de ellos se dediquen ex profeso a estos estudios y profundicen en ellos. Pero para que puedan llevar a buen término su tarea debe reconocerse a los fieles, clérigos o laicos, la justa libertad de investigación, de pensamiento y de hacer conocer humilde y valerosamente su manera de ver en los ampos que son de su competencia.

Full text at bit.ly/gaudiumetspes65

Sacra Congregazione Per L'educazione Cattolica

ISTRUZIONE SULLA FORMAZIONE LITURGICA NEI SEMINARI (1979)

Official text available only in Italian

50. Per una più approfondita trattazione teologica della liturgia e per la soluzione di molte difficoltà, che si presentano ai pastori di anime nell'organizzazione e nella promozione della vita liturgica, devono essere giustamente stimati i risultati sicuri delle moderne scienze umane, quali l'antropologia, la sociologia, la linguistica, la storia comparata delle religioni ecc., che in vari casi offrono non poca luce, sempre però nei limiti imposti dall'indole soprannaturale della liturgia. In ciò deve essere coltivato negli alunni il senso del discernimento, affinché diventino capaci di stimare rettamente l'importanza di queste materie, e nello stesso tempo di evitare quanto potrebbe condurre a sminuire il genuino valore soprannaturale del culto cattolico.

Nell'uso di queste scienze si osservi inoltre la regola secondo cui, «più che moltiplicare il numero delle discipline, bisognerà cercare di inserire adeguatamente in quelle già prescritte le nuove questioni e i nuovi aspetti».

Nell'uso di queste scienze si osservi inoltre la regola secondo cui, «più che moltiplicare il numero delle discipline, bisognerà cercare di inserire adeguatamente in

quelle già prescritte le nuove questioni e i nuovi aspetti». (RF #80)

Full text at bit.ly/istruzione79

English Unofficial Translation:

50. **For a deeper theological treatment of the liturgy as well as to resolve many problems confronting pastors of souls in the ordering and promoting of the liturgy, it is necessary to appreciate certain findings of modern sciences,** such as anthropology, sociology, linguistics and the comparative history of religions, etc. These throw more than a little light in certain cases on liturgical studies, but only within the limits established by the supernatural nature of the liturgy. In these matters what must be cultivated in the students is a sense of discernment, giving them the capacity to evaluate soundly the importance of these kinds of disciplines while at the same time teaching them to avoid anything that could lessen the full, supernatural force of Catholic worship.

In the use of these sciences, the following norm should be observed, "... care must be taken to avoid multiplying the number of courses. Rather insert new questions or new ways of looking at things into the courses which are already provided, where this is possible." (RF, #80)

Congregation For Catholic Education

RATIO FUNDAMENTALIS INSTITUTIONIS SACERDOTALIS (1985)

70. **The studies of philosophy and related sciences**, which – in any way be ordered disciplines during the formative years (cf. n. 60) – should correspond to a full two years, as they aim to improve the human formation of youth, **stimulating their sense of critical and procuring a deeper knowledge of ancient and modern culture of which the human family has been enriched over the course of the centuries. These studies are conducted in order to help the student to penetrate more deeply and to live their faith**, and, at the same time, to prepare for theological studies, to arrange to properly exercise the apostolic ministry, **so that a dialogue can be established with the men of our time in the most appropriate way.**

73. They also teach the **related sciences, which are the natural sciences** and mathematics in reference to the problems associated with the philosophy, taking into account, however, of proper proportions, so providing a useful complement to the main disciplines and to preclude an encyclopedic and superficial erudition.

Español

73. Si insegnino anche le *scienze affini*, quali sono le scienze naturali e la matematica in riferimento ai problemi connessi con la filosofia, tenuto conto tuttavia delle debite proporzioni, in modo che offrano un utile complemento alle discipline principali e sia evitata un'erudizione enciclopedica e superficiale.

Full text at bit.ly/ratiodfundamentalis

Apostolic Exhortation on the Formation of Priests in the Circumstances of the Present Day

PASTORES DABO VOBIS (1992) PROMULGATED BY HIS HOLINESS JOHN PAUL II

51. . . . **The intellectual formation of candidates for the priesthood finds its specific justification in the very nature of the ordained ministry, and the challenge of the “new evangelization” to which our Lord is calling the Church on the threshold of the third millennium shows just how important this formation is.** . . . The present situation is heavily marked by religious indifference, by a widespread mistrust regarding the real capacity of reason to reach objective and universal truth, **and by fresh problems and questions brought up by scientific and technological discoveries. It strongly demands a high level of intellectual formation, such as will enable priests to proclaim, in a context like this, the changeless Gospel of Christ and to make it credible to the legitimate demands of human reason.**

52. . . . For a deeper understanding of humanity and the phenomena and lines of development of society, in relation to a pastoral ministry which is an “incarnate” as possible, the so-called “*human sciences*” can be of considerable use. . . . **Also in the precise field of the positive or descriptive sciences, these can help the future priest**

prolong the living “contemporaneousness” of Christ. As Paul VI once said, “Christ became the contemporary of some people and spoke their language. Our faithfulness to him demands that this contemporaneousness should be maintained.” (Paul VI, 25 September 1970)

54. Because of its relationship to the believer, theology is led to pay particular attention both to the fundamental and permanent question of the relationship between faith and reason and **to a number of requirements more closely related to the social and cultural situation of today. . . . In regard to the second we have disciplines which have been and are being developed as responses to problems strongly felt nowadays.**

Español

51. La formación intelectual de los candidatos al sacerdocio encuentra su justificación específica en la naturaleza misma del ministerio ordenado y manifiesta su urgencia actual ante el reto de la nueva evangelización a la que el Señor llama a su Iglesia a las puertas del tercer milenio. «Si todo

cristiano —afirman los Padres sinodales— debe estar dispuesto a defender la fe y a dar razón de la esperanza que vive en nosotros (cf. 1 Pe 3, 15), mucho más los candidatos al sacerdocio y los presbíteros deben cuidar diligentemente el valor de la formación intelectual en la educación y en la actividad pastoral, dado que, para la salvación de los hermanos y hermanas, deben buscar un conocimiento más profundo de los misterios divinos. **Además, la situación actual, marcada gravemente por la indiferencia religiosa y por una difundida desconfianza en la verdadera capacidad de la razón para alcanzar la verdad objetiva y universal, así como por los problemas y nuevos interrogantes provocados por los descubrimientos científicos y tecnológicos, exige un excelente nivel de formación intelectual, que haga a los sacerdotes capaces de anunciar — precisamente en ese contexto— el inmutable Evangelio de Cristo y hacerlo creíble frente a las legítimas exigencias de la razón humana.**

52. Para una comprensión más profunda del hombre y de los fenómenos y líneas de evolución de la sociedad, en orden al ejercicio, «encarnado» lo más posible, del ministerio pastoral, pueden ser de gran utilidad *las llamadas «ciencias del hombre»*, como la sociología, la psicología, la pedagogía, la ciencia de la economía y de la política, y la ciencia de la comunicación social. Aunque sólo sea en el

ámbito muy concreto de las ciencias positivas o descriptivas, éstas ayudan al futuro sacerdote a prolongar la «contemporaneidad» vivida por Cristo. «Cristo, decía Pablo VI, se ha hecho contemporáneo a algunos hombres y ha hablado su lenguaje. La fidelidad a Él requiere que continúe esta contemporaneidad».

54. La referencia al hombre creyente lleva la teología a dedicar una particular atención, por un lado, a las consecuencias fundamentales y permanentes de la relación fe-razón; por otro, **a algunas exigencias más relacionadas con la situación social y cultural de hoy.** Bajo el primer punto de vista se sitúa el estudio de la teología fundamental, que tiene como objeto el hecho de la revelación cristiana y su transmisión en la Iglesia. **En la segunda perspectiva se colocan aquellas disciplinas que han tenido y tienen un desarrollo más decisivo como respuestas a problemas hoy intensamente vividos, como por ejemplo el estudio de la doctrina social de la Iglesia, que «pertenece al ámbito... de la teología y especialmente de la teología moral», y que es uno de los «componentes esenciales» de la «nueva evangelización», de la que es instrumento; igualmente el estudio de la misión, del ecumenismo, del judaísmo, del Islam y de otras religiones no cristianas.**

Full text at bit.ly/pastoresdabo

Encyclical Letter

FIDES ET RATIO (1998) OF THE HOLY FATHER JOHN PAUL II
ON THE RELATIONSHIP BETWEEN FAITH AND REASON

29. It is unthinkable that a search so deeply rooted in human nature would be completely vain and useless. The capacity to search for truth and to pose questions itself implies the rudiments of a response. Human beings would not even begin to search for something of which they knew nothing or for something which they thought was wholly beyond them. Only the sense that they can arrive at an answer leads them to take the first step. This is what normally happens in scientific research. **When scientists, following their intuition, set out in search of the logical and verifiable explanation of a phenomenon, they are confident from the first that they will find an answer, and they do not give up in the face of setbacks. They do not judge their original intuition useless simply because they have not reached their goal; rightly enough they will say that they have not yet found a satisfactory answer.**

The same must be equally true of the search for truth when it comes to the ultimate questions.

The thirst for truth is so rooted in the human heart that to be obliged to ignore it would cast our existence into jeopardy. Everyday life shows well enough how each one of us is preoccupied by the pressure of a few fundamental questions and how in the soul of each of us there is at least an outline of the answers. One reason why the truth of these answers convinces is that they are no different in substance from the answers to which many others have come. To be sure, not every truth to which we come has the same value. But the sum of the results achieved confirms that in principle the human being can arrive at the truth.

34. This truth, which God reveals to us in Jesus Christ, is not opposed to the truths which philosophy perceives. On the contrary, the two

modes of knowledge lead to truth in all its fullness. **The unity of truth is a fundamental premise of human reasoning, as the principle of non-contradiction makes clear. Revelation renders this unity certain, showing that the God of creation is also the God of salvation history. It is the one and the same God who establishes and guarantees the intelligibility and reasonableness of the natural order of things upon which scientists confidently depend,⁽²⁹⁾ and who reveals himself as the Father of our Lord Jesus Christ.** This unity of truth, natural and revealed, is embodied in a living and personal way in Christ, as the Apostle reminds us: "Truth is in Jesus" (cf. Eph 4:21; Col 1:15-20). He is the eternal Word in whom all things were created, and he is the incarnate Word who in his entire person (30) reveals the Father (cf. Jn 1:14, 18). What human reason seeks "without knowing it" (cf. Acts 17:23) can be found only through Christ: what is revealed in him is "the full truth" (cf. Jn 1:14-16) of everything which was created in him and through him and which therefore in him finds its fulfilment (cf. Col 1:17).

Español

29. No se puede pensar que una búsqueda tan profundamente enraizada en la naturaleza humana sea del todo inútil y vana. La capacidad misma de buscar la verdad y de plantear preguntas implica ya una primera respuesta. El hombre no comenzaría a buscar lo que desconociese del todo o considerase absolutamente inalcanzable. Sólo la perspectiva de poder alcanzar una respuesta puede inducirlo a dar el primer paso. De hecho esto es lo que sucede normalmente en la investigación científica. **Cuando un científico, siguiendo una intuición suya, se pone a la búsqueda de la explicación lógica y verificable de un fenómeno determinado, confía desde el principio que encontrará una respuesta, y no se detiene ante los fracasos. No considera inútil la intuición originaria sólo porque no ha alcanzado el objetivo; más bien dirá con razón que no ha encontrado aún la respuesta adecuada.**

Esto mismo es válido también para la investigación de la verdad en el ámbito de las cuestiones últimas. La sed de verdad está tan radicada en el

corazón del hombre que tener que prescindir de ella comprometería la existencia. Es suficiente, en definitiva, observar la vida cotidiana para constatar cómo cada uno de nosotros lleva en sí mismo la urgencia de algunas preguntas esenciales y a la vez abriga en su interior al menos un atisbo de las correspondientes respuestas. Son respuestas de cuya verdad se está convencido, incluso porque se experimenta que, en sustancia, no se diferencian de las respuestas a las que han llegado otros muchos. Es cierto que no toda verdad alcanzada posee el mismo valor. Del conjunto de los resultados logrados, sin embargo, se confirma la capacidad que el ser humano tiene de llegar, en línea de máxima, a la verdad.

34. Esta verdad, que Dios nos revela en Jesucristo, no está en contraste con las verdades que se alcanzan filosofando. Más bien los dos órdenes de conocimiento conducen a la verdad en su plenitud. **La unidad de la verdad es ya un postulado fundamental de la razón humana, expresado en el principio de no contradicción. La Revelación da la certeza de esta unidad, mostrando que el Dios creador es también el Dios de la historia de la salvación. El mismo e idéntico Dios, que fundamenta y garantiza que sea inteligible y racional el orden natural de las cosas sobre las que se apoyan los científicos confiados,²⁹ es el mismo que se revela como Padre de nuestro Señor Jesucristo.** Esta unidad de la verdad, natural y revelada, tiene su identificación viva y personal en Cristo, como nos recuerda el Apóstol: « Habéis sido enseñados conforme a la verdad de Jesús » (Ef 4, 21; cf. Col 1, 15-20). Él es la *Palabra eterna*, en quien todo ha sido creado, y a la vez es la *Palabra encarnada*, que en toda su persona ³⁰ revela al Padre (cf. Jn1, 14,18). Lo que la razón humana busca « sin conocerlo » (Hch 17, 23), puede ser encontrado sólo por medio de Cristo: lo que en Él se revela, en efecto, es la « plena verdad » (cf. Jn 1, 14-16) de todo ser que en Él y por Él ha sido creado y después encuentra en Él su plenitud (cf. Col 1, 17).

Full text at bit.ly/fidesetratio1998



RE-ENGAGING SCIENCE IN SEMINARY FORMATION

BY THE NUMBERS: SCIENCE COURSE DEVELOPMENT GRANTS

441
STUDENTS

252
SEMINARIANS (57%)

67
CREDIT HOURS

119 CREDIT
HOURS
(Projected when accounting
for repeated courses)

8
TWO-CREDIT COURSES

17
THREE-CREDIT COURSES

Projected when accounting for repeated courses:

13
TWO-CREDIT COURSES

31
THREE-CREDIT COURSES

41 COURSES
DURING THREE-YEAR GRANT

8 OFFERED
AFTER THE GRANT CLOSES

13 RENEWAL GRANTS
AWARDED

SEMINARIES RECEIVING GRANTS

24
SEMINARIES IN
19 STATES

20
MAJOR
SEMINARIES

4
COLLEGE
SEMINARIES

6
SEMINARIES RECEIVED
GRANTS FOR 2 COURSES

25 NEW SCIENCE COURSES OFFERED
(OUT OF 30 MAJOR SEMINARIES IN THE U.S.)

All U.S. States with Major Seminaries, with the exception of Michigan, have one seminary or more with a science course scheduled in either the major seminary, the college seminary, or both.

15 COURSES
TAUGHT TWICE

4 COURSES
TAUGHT THREE TIMES

Program of Priestly Formation *FIFTH EDITION* (2006)

UNITED STATES CONFERENCE OF CATHOLIC BISHOPS

137. At the same time, this knowledge is not simply for personal possession but is destined to be shared in the community of faith. And that is why it is “for the salvation of their brothers and sisters.” **Intellectual formation has an apostolic and missionary purpose and finality.**

138. In the seminary program, **intellectual formation culminates in a deepened understanding of the mysteries of faith that is pastorally oriented toward effective priestly ministry, especially preaching.** This understanding, however, requires previous intellectual formation and academic integrity as foundational. The overall goal of every stage of seminary formation is to **prepare a candidate who is widely knowledgeable about the human condition, deeply engaged in a process of understanding divine revelation, and adequately skilled in communicating his knowledge to as many people as possible.**

140. Many candidates approach the seminary with significant educational background. They are, however, often narrowly educated, that is, **they may have great expertise in a particular area and have a high level of technical training, but lack a wide background. Often lacking is education in the humanities, which would enable them to study theology effectively and make pastoral connections with the lives of the people whom they will serve.**

COLLEGE SEMINARY

146. In the college seminary, students follow a double course of intellectual formation. **They first pursue the liberal arts, through which they acquire a sense of the great human questions contained in the arts and sciences. They synthesize and organize their study of the liberal arts through the study of philosophy,** which also serves as a preparation for the study of theology. This two-fold college program also initiates students to the study of theology that

will, of course, be pursued in greater depth in the theologate. A good college seminary program promotes excellence and takes necessary steps for students to achieve it.

147. A sound liberal arts education for candidates preparing for the priesthood provides multiple benefits. The study of the natural world and of humanity in all its historical and cultural diversity represents a significant value in its own right. **Such an education encourages intellectual curiosity, promotes critical thought, and fosters disciplined habits of study. A liberal arts education also teaches students to communicate with others in a clear and effective way.**

156. The philosophy program must include the study of logic, epistemology, philosophy of nature, metaphysics, **natural theology, anthropology,** and ethics:

- **The study of the philosophy of nature, which treats fundamental principles like substance, form, matter, causality, motion, and the soul, provides seminarians a foundation for the study of metaphysics, natural theology, anthropology, and ethics.**

GRADUATE THEOLOGY

163.

- When theology is studied in the context of priestly formation, it cannot be detached from other human knowledge. In fact, it is to be integrated with other elements of human understanding, especially philosophy and the human sciences. 107

107 See *Pastores Dabo Vobis*, no. 53.

- Theology’s theoretical and practical dimensions in priestly mission and ministry mean that it must be rigorous both academically and pastorally in its orientation. 113

Apostolic Exhortation

EVANGELII GAUDIUM (2013)

OF THE HOLY FATHER FRANCIS ON THE PROCLAMATION OF THE GOSPEL IN TODAY'S WORLD

242. Dialogue between science and faith also belongs to the work of evangelization at the service of peace.

Whereas positivism and scientism “refuse to admit the validity of forms of knowledge other than those of the positive sciences”, [190] the Church proposes another path, which calls for a synthesis between the responsible use of methods proper to the empirical sciences and other areas of knowledge such as philosophy, theology, as well as faith itself, which elevates us to the mystery transcending nature and human intelligence. Faith is not fearful of reason; on the contrary, it seeks and trusts reason, since “the light of reason and the light of faith both come from God” [191] and cannot contradict each other. **Evangelization is attentive to scientific advances and wishes to shed on them the light of faith and the natural law so that they will remain respectful of the centrality and supreme value of the human person at every stage of life. All of society can be enriched thanks to this dialogue, which opens up new horizons for thought and expands the possibilities of reason. This too is a path of harmony and peace.**

243. The Church has no wish to hold back the marvelous progress of science. On the contrary, she rejoices and even delights in acknowledging the enormous potential that God has given to the human mind. Whenever the sciences – rigorously focused on their specific field of inquiry – arrive at a conclusion which reason cannot refute, faith does not contradict it. Neither can believers claim that a scientific opinion which is attractive but not sufficiently verified has the same weight as a dogma of faith. At times some scientists have exceeded the limits of their scientific competence by making certain statements or claims. But here the problem is not with reason itself, but with the promotion of a particular ideology which blocks the path to authentic, serene and productive dialogue.

Español

242. El diálogo entre ciencia y fe también es parte de la acción evangelizadora que pacifica. El cientismo y el positivismo se rehúsan a «admitir como válidas las formas de conocimiento diversas de las propias de las ciencias positivas». La Iglesia propone otro camino, que exige una síntesis entre un uso responsable de las metodologías propias de las ciencias empíricas y otros saberes como la filosofía, la teología, y la misma fe, que eleva al ser humano hasta el misterio que trasciende la naturaleza y la inteligencia humana. La fe no le tiene miedo a la razón; al contrario, la busca y confía en ella, porque «la luz de la razón y la de la fe provienen ambas de Dios», y no pueden contradecirse entre sí. **La evangelización está atenta a los avances científicos para iluminarlos con la luz de la fe y de la ley natural, en orden a procurar que respeten siempre la centralidad y el valor supremo de la persona humana en todas las fases de su existencia. Toda la sociedad puede verse enriquecida gracias a este diálogo que abre nuevos horizontes al pensamiento y amplía las posibilidades de la razón. También éste es un camino de armonía y de pacificación.**

243. La Iglesia no pretende detener el admirable progreso de las ciencias. Al contrario, se alegra e incluso disfruta reconociendo el enorme potencial que Dios ha dado a la mente humana. Cuando el desarrollo de las ciencias, manteniéndose con rigor académico en el campo de su objeto específico, vuelve evidente una determinada conclusión que la razón no puede negar, la fe no la contradice. Los creyentes tampoco pueden pretender que una opinión científica que les agrada, y que ni siquiera ha sido suficientemente comprobada, adquiera el peso de un dogma de fe. Pero, en ocasiones, algunos científicos van más allá del objeto formal de su disciplina y se extralimitan con afirmaciones o conclusiones que exceden el campo de la propia ciencia. En ese caso, no es la razón lo que se propone, sino una determinada ideología que cierra el camino a un diálogo auténtico, pacífico y fructífero.

Full text at bit.ly/evangeliiгаudiум2013

The Directory for the Ministry and the Life of Priests (2013)

CONGREGATION FOR THE CLERGY

“Special treatment must be reserved to the questions posed by scientific progress, which exercises such an influence on the way people think and live. The priest is not to dispense himself from keeping adequately updated and ready to give the reason for his hope (cf. 1Pt 3:15) in the face of the questions the faithful – many of whom have a elevated cultural level – may pose, since they are cognisant of the progress made by the sciences. In this regard the priest will not fail to consult due experts and sure doctrine. **Indeed, when presenting the Word of God the priest must take into consideration the progressive growth of the intellectual formation of people, and hence be able to adapt according to their level, as well as to various groups and their places of origin.” (95)**

Español

Los problemas que plantea el progreso científico, particularmente influyentes sobre la mentalidad y la vida de los hombres contemporáneos deben recibir un tratamiento especial. Los presbíteros no deberán eximirse de mantenerse adecuadamente actualizados y preparados para dar razón de su esperanza (cfr. 1 Pe 3, 15) frente a las preguntas que planteen los fieles —muchos de ellos de cultura elevada—, manteniéndose al corriente del avance de las ciencias, y consultando expertos preparados y de doctrina segura. **De hecho, al presentar la Palabra de Dios, el presbítero debe tener en cuenta el crecimiento progresivo de la formación intelectual de las personas y, por tanto, saber adecuarse a su nivel y también a los varios grupos o lugares de proveniencia. (95)**

Full text at bit.ly/directory13



The Gift of Priestly Formation Ratio Fundamentalis Institutionis Sacerdotalis (2016)

CONGREGATION FOR CATHOLIC EDUCATION

122. A sound pastoral formation demands not only engaging in apostolic activities, but also the study of pastoral theology. **This will benefit, where necessary, from the useful contribution of the human sciences,** especially of psychology, pedagogy and sociology.

142. ... The synthesis of knowledge required of the seminarian embraces all the other areas of priestly life, and not just the academic. The professors, in sharing and taking upon themselves the Plan of Formation of the Seminary, insofar as pertains to them, ought to spur on the seminarians, **and help them to make progress both in the area of knowledge and scientific research** and in that of the spiritual life.

159 ... Contemporary philosophical speculation must also be taken into account — especially those aspects that exert a major influence in one's own country — **along with the progress of modern sciences, so that seminarians can be adequately prepared for dialogue with others, by being properly aware of the salient trends in society.**

163. **Due attention should be given to the human sciences,** such as sociology, pedagogy, and psychology, in the aspects most relevant to formation for priestly ministry. This will expand within seminarians the capacity to know the human soul, in all its richness and frailty, in order to facilitate the formulation of calm and balanced judgements regarding people and situations.

187. Practical Guidelines. Regarding teaching methods, the following should be taken into consideration: ...

(c) Interdisciplinary seminars should be offered, to make common study more fruitful and to **promote creative collaboration between teachers and seminarians at the scientific and intellectual level;**

...

(e) The seminarians should be introduced to **the study of various pastoral questions by a scientific method,** so that they can better comprehend the intimate connection between life, piety and the knowledge attained in lectures;

RE-ENGAGING SCIENCE IN SEMINARY FORMATION

COURSE CONTENT

88% OF RECIPIENTS OFFERED
FACULTY DEVELOPMENT ACTIVITIES

19 COURSES

incorporated distance learning technologies (for course delivery, to facilitate guest speakers or share course content with the public)

10 COURSES

incorporated an experiential learning activity (service project, parishioner interviews, publishing papers, developing parish outreach strategy, etc.)

32 COURSES
HAD INVITED GUESTS
SPEAKERS

40 COURSES
DID AN OUTREACH
ACTIVITY

100%
OF COURSES

include a capstone experience (presentation, project, essay, etc.)

16 COURSES

received external coverage through the media or academic journals

Español

122. Una sólida formación pastoral exige no solo el ejercicio de actividades de carácter apostólico, sino también el estudio de la teología pastoral, **la cual contará, cuando sea necesario, con la valiosa contribución de las ciencias humanas**, especialmente de la psicología, la pedagogía y la sociología.

142. La síntesis de conocimientos, exigida al seminarista, abrace todos los demás ámbitos que se refieren a la vida sacerdotal, además del científico. Los profesores, compartiendo y secundando el proyecto formativo del Seminario en lo que les compete; estimulen y ayuden a los seminaristas a progresar, **tanto en el ámbito del conocimiento y de la investigación científica**, como en la vida espiritual.

159. Se deben tener en cuenta las investigaciones filosóficas de nuestro tiempo, sobre todo las que ejercen un mayor influjo en el país, **y el progreso de las ciencias modernas, de modo que los seminaristas, conscientes de los rasgos característicos de la sociedad**, sean preparados adecuadamente para el diálogo con los hombres.

163. **Se preste la debida atención a las ciencias humanas**, como la sociología, la pedagogía y la psicología, en los aspectos relacionados con el proceso formativo, con vistas al ministerio sacerdotal, a fin de desarrollar la capacidad de los seminaristas para conocer la interioridad del ser humano, con sus riquezas y fragilidades, para facilitar un juicio sereno y equilibrado sobre las personas y las situaciones.

187. *Indicaciones prácticas.* En lo que se refiere a los métodos didácticos, se tenga en cuenta lo siguiente:

c) Se organicen seminarios interdisciplinarios, para aprovechar mejor el estudio en común **y promover creativamente la colaboración entre docentes y seminaristas, en el ámbito científico e intelectual.**

e) Se introduzca a los seminaristas en **el estudio de los diversos problemas pastorales, con método científico**, para que puedan descubrir mejor el vínculo íntimo entre la vida, la devoción y la ciencia obtenida en las lecciones.

Full text at bit.ly/formation16

FACULTY TEACHING SCIENCE COURSES

40 PROFESSORS
TEACHING COURSES

40 HOLD ADVANCED
DEGREES (M.A.-PLUS)

38 HOLD DOCTORATES

14 HOLD DOCTORATES IN
THE SCIENCES/MEDICINE

6 HOLD M.D.s

27 HOLD DOCTORATES IN
HUMANITIES OR THEOLOGY

10 HOLD GRADUATE DEGREES IN
BOTH SCIENCE/MEDICINE AND THEOLOGY



REFLECTION & RESEARCH PAPERS (2016-2017) & HOMILIES (2018)

RE-ENGAGING SCIENCE IN US-ROMAN CATHOLIC SEMINARY FORMATION

The “R&R” competition was open to all members of the seminary faculty, full or part time. The student competition was open only to students enrolled as seminarians in RC seminaries or houses of study under the sponsorship of religious orders. Essays were required to be original and not previously published — with the permission from winners for us to place entries for publication.

Requested length: 2,500–4,000 words for faculty submissions; 1,500–3,000 for seminary student entries. For faculty, one award at \$1,000; two awards at \$500 each. For seminarians, four awards at \$500 each.

In 2016 and 2017, we sponsored international essay contests for faculty and students. Materials were printed in English, Spanish, and French and were sent by email to all seminaries worldwide that we were able to locate using our own database and the extended one produced by C.A.R.A.

ESSAY COMPETITION ROUND 1

AWARDS TO SEMINARY FACULTY

Following are awards for essays submitted by Faculty in Roman Catholic seminaries. Comments provided by judges

\$1,000 – THOMAS MCLAUGHLIN

St. John Vianney Theological Seminary
Denver, Colorado, USA

The Heavens Declare the Glory of God

“An especially incisive commentary on Psalm 19 in the age of science.”

\$500 – STEPHEN JAYARD SUSAINATHAN

Papal Seminary
Pune, India

Seminary, Science and Signs of the Times: An invitation to be Wise, not Otherwise

“A pertinent approach on the placebo-nocebo effects in the interaction between physics and psychism with consequences for the dialogue science and religion.”

\$500 – STACY TRASANCOS

Holy Apostles Seminary
Cromwell, Connecticut, USA

These Thy Atoms

“A splendid review of questions related to physics and chemistry/theology through the notion and history of atoms.”

AWARDS TO SEMINARIANS

The following seminarians each received a grant of \$500US for their contributions to the International Science Essay Competition.

ALEX CLARK

Saint Mary Seminary and Graduate
School of Theology
Wickliffe, Ohio USA

Morality and Science: Scientism and Existence of Objective Morality

“Very clear and good articulation of the relationship between science-philosophy and moral theology, apposite method and well-chosen references.”

MICHAEL O'CONNOR

Mount Angel Seminary
Mount Angel, Oregon, USA

Going the 'Other' Way

"A creative reflection by the author, a neurobiologist, in conversation with scientism."

BRO. LARRY ONOKPITE, SPS

St. Joseph Theological Institute
Cedara, South Africa

The Multiverse: A Reflection

"A very pertinent reflection indicating good knowledge of science and theology; a well-constructed essay."

STOPHYNUS UGOCHUKWU ANYANWU

Bigard Memorial Seminary/
Enugu, Nigeria, Africa

Scientific Paradigm in Dialogue with Theological Methodology in Age of Science

"Very good sense of the dialogue and well done synthesis of current and pertinent positions."

ESSAY COMPETITION ROUND 2

AWARDS TO SEMINARY FACULTY

Following are awards for essays submitted by faculty in Roman Catholic seminaries.

\$1,000 - DOMINIC DOYLE

Boston College School of Theology & Ministry
Chestnut Hill, Massachusetts

Theological Virtue and the Psychology of Happiness

"Effectively draws a close connection between the modern subfield of positive psychology and a Thomistic understanding of traditional Christian virtues. The argument that a Christian believer's relationship with his or her conception of the divine mirrors a client's relationship with the ideal therapist is well done, with solid grounding in scientific literature."

\$500 - EDWARD FOLEY, O.F.M., Cap.

Catholic Theological Union
Chicago, Illinois

What Science Could Contribute to Preaching at Worship

"The author claims a late entry into the world of technology and science, but he is a quick learner able to rethink the value of theoretical knowledge, *theoria*, (concerned with the 'what' of existence) and its complementary state of

knowing, *phronesis/praxis*, that attends to the 'how' of acting in this existence. He tactfully takes note of the suspicions some harbor towards contemporary advances in sciences by illustrating how the connections between different forms of knowledge revitalize preaching by providing outlines of eight sermons informed by the sciences."

\$500 - AUGUSTUS PULEO

St. Charles Borromeo Seminary
Wynnewood, Pennsylvania

Attending to Pre-Natal Care Needs of Women with Help From Medical and Seminary Communities

"A compelling story of seeing first-hand the high rates of infant mortality among parishioners who are often undocumented Latinas, deciding to do something about that, and then organizing community members, area doctors, hospitals, and seminarians to engage. Less 'intellectual' and much more practical than other entries, but it seems no less responsive to the call for that."

ESSAY COMPETITION ROUND 2 (continued)

AWARDS TO SEMINARIANS

The following seminarians each received a grant of \$500US for their contributions to the International Science Essay Competition.

JOHN MOSIER

Mt. Angel Seminary
St. Benedict, Oregon

When Light Converges on Love and Vocation

"The author was a senior executive at a medical-technology firm, engaged with the cancer-treatment efforts of that company. He convincingly connects the experience of scientific and technological discoveries related to functional nano-particles as anti-tumor agents, his care of his terminally ill young wife, and his then-emerging reconnection to an earlier sense of vocation."

RAPHAEL JOSHUA CHRISTIANSON, O.P.

Aquinas Institute of Theology
St. Louis, Missouri

Reconciling Faith and Science: The Big Bang Theory and Vocation

"A clear exposition of the idea that science is a wondrous human endeavor that successfully gives us an understanding about many physical aspects of the universe, including the universe itself and its past history. Yet there remain (and are likely to remain) aspects of a believer's faith that are inaccessible to science – e.g., the Resurrection of Jesus. Those are, at least for the present, matters exclusively of faith, and not amenable to scientific proof, since, by definition, miracles suspend the regularity of nature. The author portrays this need for faith – in the unprovable – as essential, and trust in that which science has discovered as pointless to deny."

ALEXANDER M. WAINAINA, S.J.

Boston College School of Theology and Ministry
Chestnut Hill, Massachusetts

The Discovery and Use of Anti-retroviral Medicines Inspiring My Religious Vocation

"Discusses the difference that the discovery of anti-retroviral therapy has made for those who are HIV- positive and especially those with AIDS in Africa. ARVs have transformed the lives of many HIV-positive inhabitants of Africa (specifically Kenya), and especially of the HIV-positive children. The author takes inspiration from this success to minister to the sick."

HONORABLE MENTIONS \$250 EACH

The following seminarians received \$250 (US) prizes to for essays that merited Honorable Mention:

SELOM GHISLAIN AKAKPO

Arrupe College
Mount Pleasant, Harare, Zimbabwe

The Relationship between Science and Religion: From Creation to Evangelization

ERIC UROKU

Bigard Memorial Seminary
Enugu, Nigeria

Engaging Dehumanized Humanity with 'Rehumanized' Psychotherapy in Light of John 10:10



BEST PRACTICES: LEARNING FROM THOSE WHO WENT BEFORE

RE-ENGAGING SCIENCE IN US-ROMAN CATHOLIC SEMINARY FORMATION

For the past three years, instructors at Roman Catholic seminaries in the United States have been designing, scheduling, and teaching science courses. In that time, 20 Roman Catholic major seminaries and four college seminaries delivered 41 full-fledged, for-credit, new, and sometimes required courses in seminary curricula. The result was far more than we expected, or thought possible.

On-site visits to classes by this project's Core Team, as well as course assessments provided by the instructors themselves, consistently revealed creativity in design, assignments, scheduling, advertising, outreach, student goals, resources, and faculty development. We have gathered some of these discerning pedagogical choices in a separate publication, designating them "Best Practices" — aware that one size does not fit all yet under the assumption that even seasoned instructors welcome knowing what others have done with some measure of success.

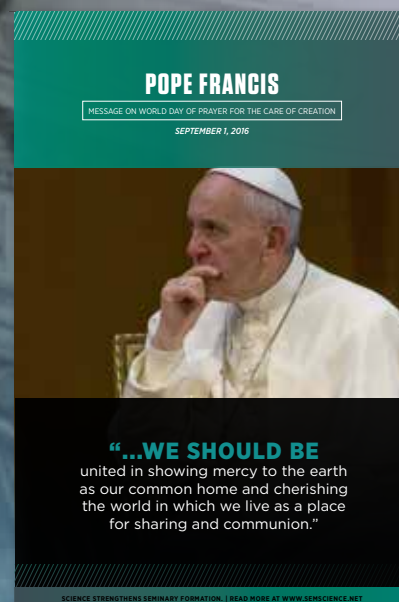
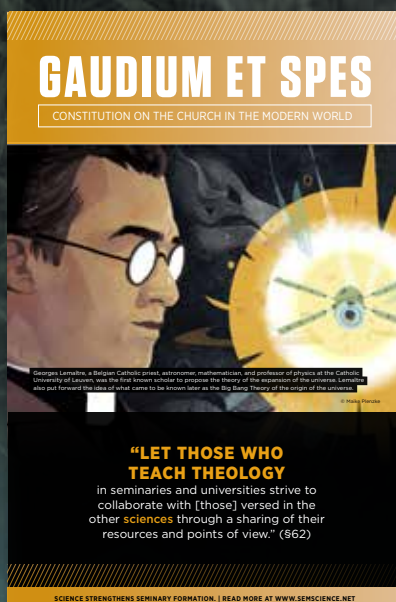
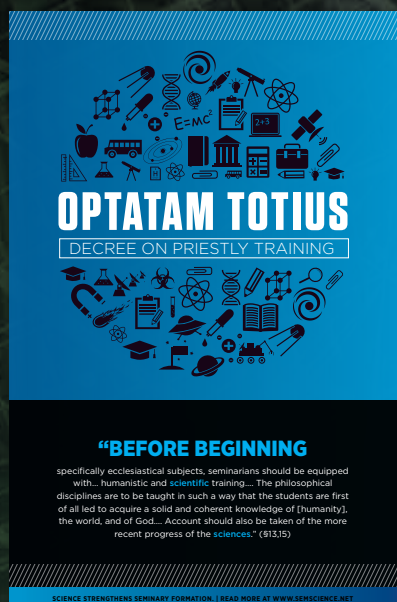
Best Practices comprise a separate publication of forty-eight pages, available by request until September 1, 2018. The entire publication is available online on our website at semscience.net.

The Best Practices covered are:

- 1 **ORGANIZING A SCIENCE COURSE**
- 2 **ENCOURAGING INTEREST IN SCIENCE COURSES**
- 3 **STUDENT LEARNING GOALS, OUTCOMES, ASSESSMENTS**
- 4 **CREATIVE ASSIGNMENTS**
- 5 **PUBLIC OUTREACH**
- 6 **FACULTY DEVELOPMENT**
- 7 **RESPONSES FROM SEMINARIANS**
- 8 **PRINT AND DIGITAL RESOURCES**

We invite you to take a look or to write us for a copy of the booklet.

SCIENCE IN SEMINARY FORMATION POSTER SERIES



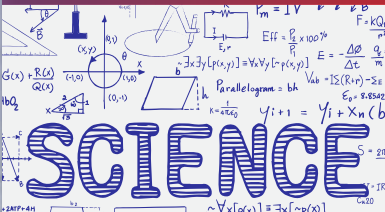
We are pleased to present a series of 14 posters (some, en español) featuring quotes from Church documents and other sources on the importance of science in seminary formation. Seminaries may use them to:

- Encourage interest among students for science courses
- Encourage interest among students for science courses
- Supplement faculty development and/or outreach announcements
- Engage dialogue on the Big Questions in science
- Invite conversation on Church documents that mandate scientific literacy
- Understand the positive relationship between science and faith
- Highlight the importance of science in the seminary curriculum

PASTORES DABO VOBIS

APOSTOLIC EXHORTATION ON THE FORMATION OF PRIESTS IN THE CIRCUMSTANCES OF THE PRESENT DAY

POPE JOHN PAUL II - 1992



SCIENCE

“... THE INTELLECTUAL FORMATION

The present situation is heavily marked by... fresh problems and questions brought up by scientific and technological discoveries. It strongly demands a high level of intellectual formation, such as will enable priests to proclaim, in a context like this, the changeless Gospel of Christ and to make it credible to the legitimate demands of human reason... For a deeper understanding of (humanity) and the phenomena and lines of development of society, in relation to a pastoral ministry which is as “incarnate” as possible... [the sciences] can help the future priest prolong the living “contemporaneity” of Christ.” (§51,52)

SCIENCE STRENGTHENS SEMINARY FORMATION. | READ MORE AT WWW.SEMSCIENCE.NET

POPE FRANCIS

EVANGELII GAUDIUM

NOVEMBER 24, 2013



“DIALOGUE BETWEEN

science and faith also belongs to the work of evangelization at the service of peace.” (§242)

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GAUDIUM ET SPES

CONSTITUTION ON THE CHURCH IN THE MODERN WORLD



“LET THOSE WHO

TEACH THEOLOGY

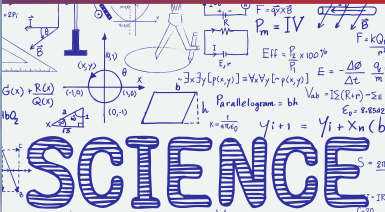
in seminaries and universities strive to collaborate with [those] versed in the other sciences through a sharing of their resources and points of view.” (§62)

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PASTORES DABO VOBIS

EXHORTACIÓN APOSTÓLICA SOBRE LA FORMACIÓN DE LOS SACERDOTES EN LA SITUACIÓN ACTUAL

PAPA JUAN PABLO II - 1992



SCIENCE

<<LA SITUACIÓN ACTUAL,

marcada gravemente por... los problemas y nuevos interrogantes provocados por los descubrimientos científicos y tecnológicos, exige un excelente nivel de formación intelectual, que haga a los sacerdotes capaces de anunciar—precisamente en ese contexto—el inmutable Evangelio de Cristo y hacerlo creíble frente a las legítimas exigencias de la razón humana... Aunque solo sea en el ámbito muy concreto de las ciencias positivas o descriptivas, éstas ayudan al futuro sacerdote a prolongar la «contemporaneidad» vivida por Cristo.>> (§51,52)

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PAPA FRANCISCO

EVANGELII GAUDIUM

24 DE NOVIEMBRE 2013



<<EL DIÁLOGO ENTRE

ciencia y fe también es parte de la acción evangelizadora que pacifica.>> (§242)

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GAUDIUM ET SPES

CONSTITUCIÓN SOBRE LA IGLESIA EN EL MUNDO ACTUAL



<<LOS QUE SE DEDICAN


a las ciencias teológicas en los seminarios y universidades, empuñen en colaborar con [los quienes son] versados en las otras materias, poniendo en común sus energías y puntos de vista.>> (§62)

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FROM A LETTER OF POPE JOHN PAUL II

TO REVEREND GEORGE V. COYNE, S.J., FORMER DIRECTOR OF THE VATICAN OBSERVATORY

June 1, 1998



“TURNING TO THE RELATIONSHIP


BETWEEN RELIGION AND SCIENCE...

we have begun to talk to one another on deeper levels than before, and with greater openness towards one another's perspectives. We have begun to search together for a more thorough understanding of one another's disciplines, with their competencies and their limitations, and especially for areas of common ground. In doing so, we have uncovered important questions which concern both of us, and which are vital to the larger human community we both serve. It is crucial that this common search based on critical openness and interchange should not only continue but also grow and deepen in its quality and scope.”

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VIDEO MESSAGE OF POPE FRANCIS

TED CONFERENCE - APRIL 26, 2017



“EVEN SCIENCE—

and you know it better than I do - points to an understanding of reality as a place where every element connects and interacts with everything else.... How wonderful would it be if the growth of scientific technological innovation would come along with more equality and social inclusion. How wonderful would it be, while we discover faraway planets, to rediscover the needs of the brothers and sisters orbiting around us.”

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PROFILES OF CATHOLIC SCIENTISTS

Forty-four Roman Catholic scientists is a small sample. We could have chosen hundreds of others, but even this incomplete collection should suffice to indicate the commitment of the Catholic Church over the centuries to the importance of science — its method, its potential, its discoveries — for humankind.



Maria Gaetana Agnesi



Albertus Magnus



André-Marie Ampère



Augustine of Hippo



Roger Bacon



Louis Braille



Jan Brožek



Francesco Faà di Bruno



Alexis Carrel



Christopher Clavius, S.J.



Nicolaus Copernicus



Marie Curie



René Descartes



Enrico Fermi



Jean-Bertand-Léon Foucault



Galileo Galilei



Pope Gregory XIII



Johannes Gutenberg



Hildegard of Bingen, O.S.B.



Peter E. Hodgson



Stanley Jaki, O.S.B.



Pope John XXI



Athanasius Kircher, S.J.



Antoine Lavoisier



Jérôme Lejeune



Georges Lemaître



Leonardo da Vinci



Urbain Le Verrier



Guglielmo Marconi



Gregor Mendel, OSA



Marin Mersenne



Nicholas of Cusa



Nicole Oresme



Joseph O'Dwyer



Blaise Pascal



Louis Pasteur



Jules Henri Poincaré



Michael Polanyi



Matteo Ricci, S.J.



Pierre Teilhard de Chardin, S.J.



Thomas Aquinas



Evangelista Torricelli



William of Ockham



John Zahm, C.S.C.

LET THOSE WHO TEACH THEOLOGY IN SEMINARIES AND UNIVERSITIES STRIVE TO COLLABORATE WITH MEN VERSED IN THE OTHER SCIENCES THROUGH A SHARING OF THEIR RESOURCES AND POINTS OF VIEW. THEOLOGICAL INQUIRY SHOULD PURSUE A PROFOUND UNDERSTANDING OF REVEALED TRUTH; AT THE SAME TIME IT SHOULD NOT NEGLECT CLOSE CONTACT WITH ITS OWN TIME THAT IT MAY BE ABLE TO HELP THESE MEN SKILLED IN VARIOUS DISCIPLINES TO ATTAIN TO A BETTER UNDERSTANDING OF THE FAITH.

Gaudium et Spes, (1965) ¶ 62

AN INTERVIEW WITH REVEREND GEORGE V. COYNE, S.J.

DIRECTOR OF THE VATICAN OBSERVATORY (1978-2006)

At every turn during our science in seminaries project, we found ourselves inspired and encouraged by the life and work of Reverend George V. Coyne, S.J., an astrophysicist and former director of the Vatican Observatory for almost 30 years (1978-2006). Father Coyne was not only on the front lines promoting the need for dialogue between scientific and theological communities, but he also unrelentingly advanced the cause of scientific literacy as a critical component of seminary formation.

We contacted Father Coyne at Le Moyne College in Syracuse, New York, where he is McDevitt Chair of Religious Philosophy and McDevitt Chair in Physics. He graciously agreed to be interviewed by Reverend John Kartje, Rector-President of Saint Mary of the Lake/Mundelein Seminary near Chicago — who also, fittingly, is an astrophysicist.

Following are excerpts of the dialogue between these two distinguished scientist-theologians.

JK: Father Coyne, let's start at the beginning. You served as director of the Vatican Observatory for almost three decades, and have been honored for your work in the field of stellar astrophysics. What readers would likely want to know is what originally sparked your interest in astronomy?

GC: I entered the Jesuits at age 18. Back then, Jesuit formation included two full years of Latin and Greek after two years of the novitiate. My Greek professor who, in addition to a doctorate in ancient languages and culture, had a master's degree in mathematics and a really serious interest in astronomy.

He would be expounding on a Greek ode, and all of a sudden would interject, "Gentlemen, do you realize that tomorrow is the beginning of Spring? Do you know what that means?!" He would then trace the ecliptic and celestial equator and the

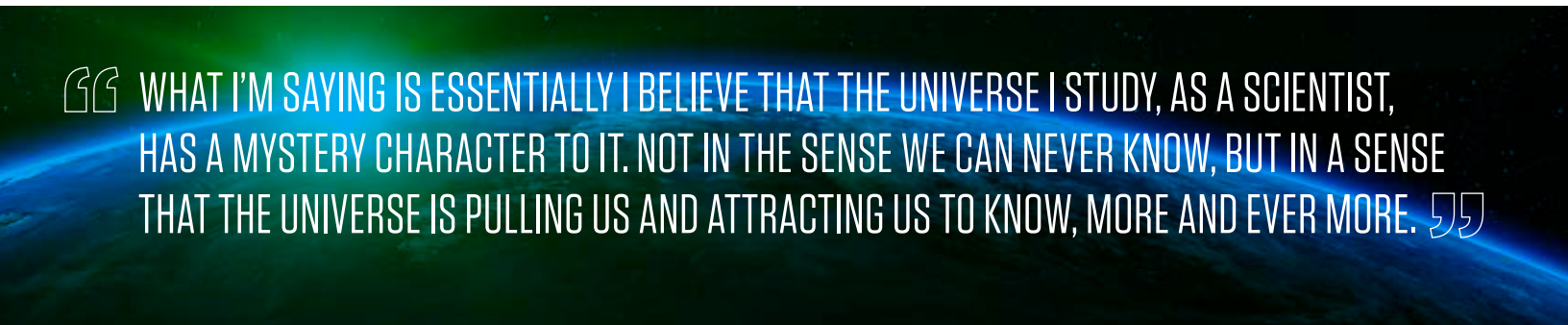
equinoxes and solstices on the board. A week later, he'd get distracted again and proclaim, "We just got the first radio signals from Jupiter!"

I was called into his office, I thought, to review my Greek themes, but he asked instead, "Why, whenever I start talking about astronomy, are you sitting on the edge of your chair?"

"Father," I said. "Everything that you're talking about — radio signals from Jupiter, solstices, seasons — all of it is fascinating!"

"We've got to get you reading," he said. Then he paused. "Damn it, we have this dumb rule that when you're studying Greek and Latin, you can't study anything else. You can't take any books out of our library except the ancients."

He picked up the phone and called another library. "Margie, there's a student of mine, here at the Jesuit seminary; could we arrange for him to use my library card?" He provided me with



“ WHAT I'M SAYING IS ESSENTIALLY I BELIEVE THAT THE UNIVERSE I STUDY, AS A SCIENTIST, HAS A MYSTERY CHARACTER TO IT. NOT IN THE SENSE WE CAN NEVER KNOW, BUT IN A SENSE THAT THE UNIVERSE IS PULLING US AND ATTRACTING US TO KNOW, MORE AND EVER MORE. ”

the required note for the library. He also gave me a flashlight. I pulled the blankets over my head at night to read because it was forbidden. It was forbidden fruit, and it was good fruit. That's what fed my interest in astronomy. After I received my bachelor's degree in mathematics, my Jesuit superiors put me on a track for studies in science. Eventually, I got a doctorate in astronomy, and it went on from there.

JK: Settled for some time at the Vatican Observatory, John Paul II addressed a letter to you in 1988 on the 300th anniversary of Newton's Principia, that, in some ways, seemed to set the tone, at least in the public imagination, for the ongoing dialogue on faith and science. Could you say something about the influence of John Paul II on that dialogue?

GC: I was named director of the Vatican Observatory about the same time as John Paul II became Pope. I retired as director in 2006 about the same time as John Paul II's death. For 28 years, John Paul II was Pope, and I was director of the Vatican Observatory.

During those years, we opened a research institute in Arizona, built a two-meter telescope there, and then opened summer schools in astrophysics at Castel Gandolfo. We invited 25 students every year from around the world who intended to go into graduate science programs. John Paul II supported that to the hilt right from the start.

From the very beginning of his papacy, John Paul II wanted to establish a dialogue between the culture of religious faith and the culture of the natural sciences. In his first year, speaking to the Pontifical Academy of Sciences, he said that we have to address the myth of the "Galileo situation" because it continued to suggest that there's an intrinsic conflict between faith and science.

Two years later, he established his Galileo Commission to do a quiet historical reflection upon that whole Ptolemaic/Copernican controversy. That was a sign that he was extremely interested in clearing the ground for an honest and productive dialogue. So that was the beginning.

When it came time to celebrate the 300th anniversary of Newton's *Principia* in 1987, he asked our advice. We said, rather than having a parade with floats and balloons, let's have a conference on the interaction between faith and science. So we did. A book that came out of that conference was *Physics, Philosophy, and Theology*. John Paul II wrote the preface to that book. He was actually supposed to give a major talk about the anniversary celebration, rather than write a book preface, but he never gave the talk he had planned. He went to



George V. Coyne, S.J. at the Vatican Observatory Advanced Technology Telescope at the Mt. Graham International Observatory, Mt. Graham, Arizona. (Photo by Christopher Corbally, S.J.)

the United States on one of his major trips. When he came back, the finished talk that he had left on his desk had been substituted with another talk, thanks to the cardinal theologian who is supposed to keep the Pope from going into heresy.

The substituted talk was a disaster. John Paul II called me and a Polish cosmologist, Michał Heller, who was a close colleague of the Pope, to a dinner. He asked us what we should do next, since the talk, as he admitted, "certainly didn't promote dialogue." So he wrote the book preface instead.

The preface to the book, published separately in the form of a letter, accurately reflects Pope John Paul II's thinking on the need for theologians, at least some theologians, to have enough knowledge of science that they can deal with the culture of science.

JK: Why do you think it is historically it is that there haven't been more scientifically trained theologians, outside of a few notable exceptions? Do you think there's something in the tradition that may account for that?

GC: The Catholic tradition, over the past two centuries, has been, how shall I put it? Incurious. Not just about the culture of science, but about culture in general. "Preserve the faith." "Keep the good name of the Church." Those kinds of attitudes — they're not universal by any means, but they're dominant enough to have repressed curiosity about the sciences.

JK: You don't expect clergy, generally speaking, to be able to solve a differential equation. But the basic concept of quantum understanding of reality and 'Big Bang' are in common parlance. Are there not implications when priests are not scientifically literate enough to know about them?





After his tenure at the Vatican Observatory, Fr. Coyne continues to teach in the Physics and Philosophy departments at Le Moyne College in Syracuse, New York., and to lecture world-wide.

(Photo courtesy of Le Moyne College)

GC: My experience is that there were times within the past 30 years or so that, at least in parishes where I worked, the parish population was well-educated. My surmise from homilies and other sources, for example, was that parishioners were often more scientifically and technologically informed than the priests.

JK: I think that's a very fair assessment. Hence the need for programs like this initiative ["Re-Engaging Science in Seminary Formation"]. In all the questions from audiences around the world that you've fielded over the years, are there some, in particular, that seem to be more prominent than others?

GC: Well, there's one remark that continuously appears, and that's the phrase "It's only a theory."

To many, the word "theory" suggests "only a theory." There's no appreciation for the fact that "theory" means "the best scientific explanation for all the data we have." Of course we don't have the final answer — the final truth, if there is such — but science is a constant voyage, a constant journey toward getting better and better explanations. Revising our Big Bang cosmology, for example, because of what we have learned about quantum theory.

So many people are missing a basic understanding of what science is, how passionate scientists are in their search for truth, and how uncertain they are as they search for truth.

Another question I'm asked very often is, "do you really believe that _____?" People confuse belief with knowledge. "Do you really believe that the universe began in a kind of singularity in the Big Bang?" I can truly say, "I don't believe it, I know it." My knowledge is limited, of course, but the use of the word "belief" reveals a kind of inability to distinguish between knowledge and faith. I constantly hear that from my students.

A third question is, "Can you both believe and accept this as a good scientific result?" So many fail to understand that there is a coherence, that we're seeking a coherence, a dialogue that is productive.

JK: I don't know if this is something you see in your students today, but — would you say that you see a fear or a reluctance in trying to open their faith to that same kind of inquiry?

GC: I think there is a fear. It's a quiet fear, not alarm. Those who had a really traditional Catholic upbringing find it difficult at college age. They've grown up in a culture that is very safe in the sense of church attendance, catechism, all of that. But they lack cultural openness. In their post-college years, they have some job experience, but they do find it difficult, when I talk to them about cosmology or evolution, to absorb it into the way they think as Christians, as Catholics.

I tell them, we are human beings, and our culture has a whole array of beautiful elements. There's sculpture, the arts, music. There's science, philosophy. There's theology. Why should any one of these dominate my life? We all have to eventually specialize in something, but why exclude any one expression of human culture in favor of any one other? But a lot of them do.

JK: I wonder if you could speak a little bit to the question of how science can enrich and advance the ongoing development of theology? Beyond simply respecting each other's realm of influence, into real engagement: what does science bring to the theologian that he or she might not otherwise have?

GC: At the Vatican Observatory, we had a series of conferences, spread over 20 years, that produced six volumes, all addressing precisely that umbrella theme of how science can help us understand the divine — a sort of "theology of nature." These addressed various themes, like cosmology, quantum mechanics, evolution, chaos theory, all produced by bringing together theologians and

scientists who were willing to dialogue together on those various issues.

I have a very personal point of view of this, since I'm an astrophysicist. I've been teaching a course here at Le Moyne in science and religious belief. I found that the best approach to take with the students here is to start by asking, from a purely scientific point of view, "what do we know about the universe?" We know that it's not a packaged, inert system. Quantum indeterminacy, chaos, and complexity all inform us that the universe is not all predictable. And that it's creative: the universe is expanding and its biological systems are evolving, even now.

If I believe faith is another dimension, why is it not fair for me, as a scientist, to use my knowledge [of astrophysics] to learn about the God who I believe created the universe? What kind of God does this? God did not make a Cheerios box, or a Toyota car, or a washing machine — but a whole universe! This is a marvelous God!

JK: Posing the question that way suggests that science can lend some of itself to theology. In the other direction, what elements are there in core Christianity that can advance our interaction with science?

GC: The middle of the road Christian denominations, including Catholicism, have a strong sort of acceptance that there's a rational structure to the universe, the logos. It's worth exploring the universe because the Creator God sent the Logos, as we read in the prologue to John's gospel. In fact, I think, it's fairly well established that science was born out of a culture of belief in the rational structure of the universe. The early scientists, Galileo, Descartes, Leibniz, Newton, were also religious believers within their cultural milieu. They arose in cultural environments that nurtured science. Christian theology has a pretty strong rational component to it. It's really *fides quaerens intellectum* — I'm using my mind, and not just my heart.

JK: Yes! Which is the very nature of the scientific enterprise. Good science, anyway.

As you look in your own field and your subspecialty in astronomy, what do you see as one of the great outstanding problems to be engaged or addressed, in the area of faith and science? What grabs your own imagination, inspires your prayer?

GC: There's a faith dimension to the degree of ignorance that we have still in science (and that people don't fully appreciate). I'm referring to dark matter and dark energy.

I teach a general astronomy course to freshmen. Only partway through the course will I admit to them, "I'm only talking about 5 percent of the matter/energy in the universe here." The other 95 percent relates to what, in the faith dimension, we call "mystery." What I'm saying is, essentially I believe that the universe I study, as a scientist, has a mystery character to it. Not in the sense we can never know, but in a sense that the universe is pulling us and attracting us to know, more and ever more.

That's because, as a creature of God, it [the universe] participates in the mystery of God. I really do think that our degree of ignorance in essential problems is a persistent challenge to us to surmount because the universe itself participates in the mystery of God. If you believe that God created the universe, then what is faith? I always use the word "a-rational." It's not irrational, it's not completely rational. It has a rational basis, it should be coherent with what we know, but it transcends what we know.

If you accept that transcendence, God's love for me and my attempt to return it, as the personal gift of God — if you accept that, then the way to enrich faith, to make it richer and ever more challenging, is by trying to integrate it with what we know. From science, from the arts, from philosophy. It's magnificent! It's a great journey.

“FROM THE VERY BEGINNING OF HIS PAPACY, JOHN PAUL II WANTED TO ESTABLISH A DIALOGUE BETWEEN THE CULTURE OF RELIGIOUS FAITH AND THE CULTURE OF THE NATURAL SCIENCES.... JOHN PAUL II SUPPORTED THAT TO THE HILT RIGHT FROM THE START.”



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JCU Intern



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John Carroll University • 1 John Carroll Boulevard
University Heights, OH 44118 • 216.397.1651 • semscience.net