

General Faculty Meeting Minutes

May 4, 2021

125 Butler-Carlton Hall and Zoom, 4:00 p.m.

I. Call-to-Order

Chancellor Mohammad Dehghani called the meeting of the General Faculty to order at 4:03 p.m.

II. Memorial Resolutions

Chancellor Dehghani recognized Professor K. Krishnamurthy to present a memorial resolution in honor of S.N. Balakrishnan. It was moved and approved that the memorial resolution be incorporated in the minutes of the faculty meeting with copies forwarded to family members. (See Attachment A).

Chancellor Dehghani recognized Professor Kurt Kosbar for the presentation of a memorial resolution in honor of Gordon Carlson. It was moved and approved that the memorial resolution be incorporated in the minutes of the faculty meeting with copies forwarded to family members. (See Attachment B).

III. Approval of Minutes

Chancellor Dehghani called for approval of the minutes of the December 1, 2020 meeting. The minutes were approved as circulated.

IV. Unfinished Business – None

V. Reports of Standing and Special Committees - None

VI. New Business

A. Approval of Candidates for Degrees

Motion was made that the names on the previously circulated list of candidates for degrees on May 14-15, 2021, commencements be approved, subject to successful completion of any remaining degree requirements. Graduate Faculty also approved the addition of a late MBA degree awarded in Fall 2020 to a student after the Fall 2020 voting was completed. The motion was approved.

B. Costas Tsatsoulis recognized the Faculty Patent Awards winners.

Nicholas Leventis – no longer with S&T
Chariklia Sotiriou-Leventis
Malik Adnan Saeed
Jonghyun Park
Jie Li
Hai-Lung Tsai
Yiyu Shen
Yingqi Li
Chen Chen
Reza Zoughi – no longer with S&T
Mohammad Al Qaseer (Tayeb Ghasr) – no longer with S&T
Satyajeet Shinde
Sasi Jothibas
Parwani Rewatkar
Tahereh Taghvae
Jay Switzer

Costas Tsatsoulis recognized the Foreign Patent winners

Ronald O'Malley
Simon Lekakh

Von Richards
Baojun Bai
Thomas Schuman
Jingyang Pu – no longer with S&T

Costas Tsatsoulis recognized those in College of Arts, Sciences, and Business who have published books within the past year.

Trent Brown, *Murder in McComb: The Tina Andrews Case*. Louisiana State University Press, 2020.
Michael Bruening, *Refusing to Kiss the Slipper: Opposition to Calvinism in the Francophone Reformation*. Oxford University Press, 2021.
Eric Bryan, *Literary Speech Acts of the Medieval North: Essays Inspired by the works of Thomas A. Shippey*, (co-edited with Alexander Vaughan Ames). Arizona Center for Medieval and Renaissance Studies, 2020.
Eric Bryan, *Icelandic Folklore and the Cultural Memory of Religious Change*. ARC Humanities Press, 2021.
Larry Gragg, *Forged in Gold: Missouri S&T's first 150 years*. Walsworth, 2020.
Sarah Hercula. *Fostering Linguistic Equality: The SISE Approach to the Introductory Linguistics Course*. Palgrave Macmillan, 2020.
V. Prakash Reddy, *Organofluorine Chemistry: Synthesis and Applications*. Elsevier, 2020.
Kate Sheppard, *Communities and Knowledge Production in Archaeology* (co-edited with Julia Roberts, Ulf Hansson and Jonathan Trigg). Manchester University Press, 2020.
Agnes Vojta, *The Eden of Perhaps*. Spartan Press, 2020.

C. Stephen Roberts recognized the Faculty Awards winners.

Receiving the 2021 Excellence Award

Mohamed El-Gawady, Civil, Architectural and Environmental Engineering
Hongyan Ma, Civil, Architectural and Environmental Engineering
Rui Bo, Electrical and Computer Engineering
Irina Ivliyeva, Arts, Languages, and Philosophy
John Singler, Mathematics and Statistics

Receiving the 2021 Achievement Award

Merilee Krueger, Psychological Science
Katie Shannon, Biological Sciences
Jeffery Thomas, Civil, Architectural and Environmental Engineering
Patrick Taylor, Computer Science
Warner Meeks, Mechanical and Aerospace Engineering

Receiving the 2021 Research Award

Marco Cavaglia, Physics
Ulrich Jentschura, Physics
Xiong Zhang, Civil, Architectural and Environmental Engineering
Jonghyun Park, Mechanical and Aerospace Engineering
Daozhi Han, Mathematics and Statistics
Vadym Mochalin, Chemistry
Grace Yan, Civil, Architectural and Environmental Engineering

Receiving the 2021 Service Award

Nancy Stone, Psychological Science
David Westenberg, Biological Sciences
Ashok Midha, Mechanical and Aerospace Engineering

Receiving the 2021 Teaching Award

Kelly Liu, Geosciences and Geological and Petroleum Engineering
Dev Niyogi, Biological Sciences
Jessica Cundiff, Psychological Science
Jennifer Leopold, Computer Science

Amber Henslee, Psychological Science
John Greg Story, Physics
Klaus Woelk, Chemistry

D. Chancellor's Report

Chancellor began his report by noting that S&T alumnus and benefactor Fred Kummer died last Friday, April 30, 2021. Chancellor Dehghani paused for a moment of silence to reflect on the generosity and achievements of Fred Kummer and what he has done for Missouri S&T and the world. One achievement was building over 1012 hospitals across the nation.

COVID-19 planning for Fall 2021 continues. All are encouraged to receive the vaccine, which is available to any adult who wishes to receive it. Dehghani encouraged the faculty to get vaccinated and to encourage others to do as well. The sooner campus can reach "herd immunity," the better things will be. Chancellor Dehghani realizes it is a personal decision whether to receive the vaccine but does encourage all to receive it. He added that the vaccine is proven to be over 97% effective.

The chancellor reported that S&T has received over 1,000 applications for the Kummer Vanguard scholarship program which have now been awarded to over 500 students. This gift was truly inspirational to not only Missouri S&T but also Rosemary Kilker whose husband was an engineer although not a graduate from Missouri S&T. He died long ago but she was inspired by the Kummer gift, so Rosemary donated \$1.5 million for scholarships.

100 PhD Kummer Innovation and Entrepreneurship Doctoral Fellowships are available through the Kummer gift, but Chancellor Dehghani noted that S&T will be careful in the selection process to ensure we are not sacrificing quality candidates. S&T has offered 21 of the I&E Doctoral Fellows for this first year.

The search is underway for the Vice Provost and Founding Dean of the Kummer College. In addition, S&T will be conducting a search for the four research center directors. There will be 10 endowed chair positions filled through these gifts along with two extra endowed chairs due to additional gifts. Gary Havener donated \$2 million for an Endowed Chair of Mathematics and Statistics. A Rolla high school graduate, Anthony Steinmeyer, gave \$2 million for an Endowed Chair of Economics in honor of his father, who taught at S&T.

The new arrival district is close to having full funding from fundraising efforts for phase one. Chancellor Dehghani reported that the fundraising campaign is just shy of \$3 million for the total price of \$18 million. This \$18 million campaign includes \$10.35 million from private gifts and \$4.68 million from federal funds, with the final \$2.97 million to come from private gifts. Phase one does not include the parking garage structure. Soon Bureau of Mines buildings 1, 2 and 3 will be demolished to make way for the arrival district expansion. This also includes the Subway restaurant, apartment building and engineering offices in the same area which will be demolished at the same time.

Spring Commencement 2021 will be our first in-person commencement ceremony in a year. There will be four ceremonies: 6 p.m. Friday, May 14, and 9 a.m., 12 p.m. and 3 p.m. Saturday, May 15. Covid 19 safety protocols will be in place. Each student is allowed 2 guests, and all will be required to wear masks and social distance. The commencement speaker for all four ceremonies will be Dr. John Wagner, Director of Idaho National Laboratory, and a 1992 Nuclear Engineering graduate.

In addition, we will have four student speakers, one for each ceremony. They are Ashley-Ann Davis, Alivia Dean, Alissa Keller, and Elizabeth Pomerence. Ashley-Ann Davis is a native of Jamaica from Jefferson City and is an engineering management graduate and will be speaking at the 3 p.m. ceremony on Saturday. She will also pursue a Ph.D. as a Kummer Innovation and Entrepreneurship Doctoral Fellow. Alivia Dean, of Clyde, Ohio, is a mechanical engineering graduate and will be

speaking at the 3 p.m. ceremony on Saturday. Alissa Keller of St. Louis is a civil engineering graduate and will speak at the noon ceremony on Saturday. Finally, Elizabeth Pomerence of Marshall, Missouri, is a chemical engineering graduate and will speak at the Friday ceremony and the 9am ceremony of Saturday. Each ceremony will be live streamed on Facebook and you can find the link on the Registrar's Office website.

E. Faculty Senate President's Report

Steve Raper presented the Faculty Senate report. He started by thanking all faculty and staff for continuing excellence throughout the semester.

One area that Faculty Senate will address this next year is to find a better faculty teaching evaluation process. This is a project that Faculty Senate and the new provost, Colin Potts, will work to achieve. Another area is to better understand our curriculum processes.

Faculty Senate held elections at their final spring meeting in April and elected members to the standing committees. New officers for faculty senate were announced and they are: Past-President Steve Raper, President Kelly Homan, President-Elect Katherine Sheppard, Parliamentarian KC Dolan, and Secretary Dave Westenberg.

Faculty Senate will continue to work on the by-law revisions. The systemwide Intercampus Faculty Cabinet (IFC) continues to work on policy adjustments, rules/regulations, legislative updates, and senate bills. Faculty Senate continues to give input into areas such as Missouri Online and IT issues. Missouri S&T Information Technology continues to encounter issues due to short staffing.

Provost Potts starts June 1. Steve Raper ended by thanking Interim Provost Roberts for his dedication and service while as interim. Dr. Raper asked that we all continue to work together, administration, faculty, staff, and students.

VII. Announcements –

Chancellor Dehghani concluded with a few announcements. He thanked Steve Roberts for his services as interim provost.

Chancellor said that campus is looking up and we are at the highest first-time college student enrollment in the past 2 to 3 years. He added that campus is seeing increases in all new student categories for the Fall 2021 semester. Retention is increasing and higher than last year.

This should be the first year in seven years where we experience no cut in the budget and hopefully, we will have a 2% pool for merit increase. It has been a difficult year and we have had to adapt and adjust, and we have done so well. But we still must remain ready to pivot if needed.

Chancellor Dehghani concluded by thanking everyone for working toward our 'north star' goals and realizing the need to increase research and enrollment. That we have lost over 1200 students in the last 7 years and we needed to turn that around. He is grateful for all those that are helping do just that.

VIII. Adjournment – The meeting was adjourned at 5:00 p.m.

Memorial Resolution
S. N. Balakrishnan

Dr. S. N. Balakrishnan was born in Tiruchendur, Tamil Nadu, India, the son of Sivasubramanya Nadar and Vamasundari Devi. He received his undergraduate degree in aeronautical engineering from the Madras Institute of Technology in Chennai, India and his master's and doctoral degrees in aerospace engineering from the University of Texas at Austin.

Prior to joining the faculty at Missouri S&T, Dr. Balakrishnan worked as a Fellow at the Center for Space Research at the University of Texas at Austin from 1983 to 1985. Dr. Balakrishnan joined Missouri S&T in 1985 and became Curators' Distinguished Professor of Aerospace Engineering in 2010. He spent two summers as an Air Force Summer Faculty at the Eglin Air Force Base, Florida in 1992 and 1993.

Dr. Balakrishnan was internationally known for his work in developing missile guidance algorithms and intelligent control. His research interests included stability and control of aerospace and mechanical systems, cognition and bio-inspired techniques for decision and control, and large-scale optimization. His major technical contributions included the development of a new closed-form suboptimal control for nonlinear systems called the theta-D control which approximates solutions to the Hamilton-Jacobi-Bellman equations. His solution performed the best among five other developed paradigms in NASA Marshall conducted simulations. Dr. Balakrishnan was tremendously proud of this achievement, which was rightly deserved.

Dr. Balakrishnan was among the most successful early pioneers in the main approach to reinforcement learning based on dynamic programming. Known as adaptive critic or adaptive dynamic programming, these are the foundation of major breakthroughs in artificial intelligence to date. His rigorous, optimal neural-net-based controllers for systems modeled by partial differential equations, and for systems driven by impulse inputs, are fundamental and enabling contributions to neuroengineering. His contributions in this area were shown to stabilize impaired aircraft by independently-conducted experimental studies. He achieved equally groundbreaking results in multi-targeted missile defense control and many other theoretical and practical applications in the field. At a time when many control systems researchers considered it too risky to pursue neural networks approaches, he courageously blazed a trail for others to follow.

Most recently, Dr. Balakrishnan was doing research on quantum inspired learning and working with a few mathematical psychologists on abstracting human decision-making concepts which then can be related to model uncertainties in physical and cyberphysical and human-agent systems. He was really excited about extending his research expertise to new areas, and was working hard to develop the fundamental theoretical aspects of this emerging field.

Throughout his academic career, Dr. Balakrishnan was particularly dedicated to mentoring and encouraging students and developing opportunities for them while holding them to high educational and professional standards. As an example of his service to both students in Missouri and the aerospace profession, Dr. Balakrishnan was the Director of the NASA

Missouri Space Grant Consortium from 2015 to the time of his passing. He provided exemplary oversight and administration of the state-wide operation of the Space Grant program. During his tenure as Director, this activity has been responsible for facilitating and disbursing hundreds of competitive and needs-based awards to both undergraduate and graduate students at various universities and colleges across the state, as well as providing significant support for STEM initiatives in K-12 education in Missouri. Dr. Balakrishnan was also instrumental in securing significant additional funds from NASA for the Missouri Space Grant Consortium; the vision and drive he exhibited has made an indelible impact on a generation of students in Missouri. Dr. Balakrishnan served as the long-time faculty advisor for the Missouri S&T student chapter of Sigma Gamma Tau, the National Honor Society of Aerospace Engineering. He was very active in this role and was innovative and tenacious in transmitting to the students his passion for aerospace engineering – and his zeal for the pursuit of excellence within the profession.

Dr. Balakrishnan was quite involved in the American Institute of Aeronautics and Astronautics (AIAA) professional society. He served as an Associate Editor of the AIAA Journal of Guidance, Control, and Dynamics from 1995 to 2012, and was an Associate Fellow of AIAA.

Dr. Balakrishnan served as the President of Missouri S&T Faculty Senate during 2012-2013. As an officer of the Faculty Senate, Dr. Balakrishnan demonstrated consistent good humor, hard work, considered judgment, thoughtfulness, and dedication to shared governance. He maintained a friendly, collegial, and consistently positive attitude at all times. Dr. Balakrishnan's leadership skills helped the Faculty Senate and the campus succeed through strategic planning.

In addition to his responsibilities as a faculty at Missouri S&T, Dr. Balakrishnan served as the Chancellor of Shiv Nadar University in India from 2014 to 2018. He played a pivotal role during the foundational years of the university, with particular emphasis on the pedagogy of learning that stimulates the brain, logic, and creative sides of each student. His leadership and passion for excellence led to the university being chosen as an 'Institution of Eminence'.

Entrepreneur at heart, Dr. Balakrishnan founded IST-Rolla, a small business firm located at Missouri S&T Technology Development Center in Rolla, Missouri. In six years of its operations, it won three Phase I and three Phase II awards for innovative research from the Missile Defense Agency and NASA. All its interns and engineers have been undergraduate and graduate students at Missouri S&T.

Dr. Balakrishnan was a philanthropist in many ways. He strongly believed in giving back to society, and gave his time and boundless energy for the betterment of others. He once shared his motivation for stepping up to help with a community resource need. "I feel a community should step in to help. That is how I was raised, to share charity. I want to give what my parents gave me, the tools to succeed." He lived out that desire to enable others to overcome hurdles to be able to succeed. He did so quietly, compassionately, and at a level to make a difference.

One activity Dr. Balakrishnan was particularly passionate about was helping Russell House, an organization that provides safe shelter for victims of domestic and sexual violence in south-central Missouri. He served as a board member and generous benefactor. Dr. Balakrishnan did not seek to be in the limelight and did not wish to publicize his efforts to help Russell House and numerous other individuals.

Dr. Balakrishnan enjoyed playing racquetball and golf. He regularly played racquetball with Missouri S&T students at the Gale Bullman Multi-Purpose Building. He actively participated in intramural racquetball tournaments at Missouri S&T. He trained very hard to continuously improve his racquetball shots and golf drives.

Dr. Balakrishnan was a Curators' Distinguished Professor of Aerospace Engineering at the time of his passing on January 24, 2021. He is survived by his wife, Roja Balakrishnan; sons, Vijay, Karthik and Vasanth; and a daughter-in-law, Neela.

In summary, Dr. Balakrishnan was not a passive bystander in efforts to improve educational and professional outcomes for students, and to enable the personal goals of those in his community; he was fully committed to and instrumental in these efforts, and in that service, he has truly left a legacy of excellence. He touched the lives of many, and will be truly missed.

It is therefore requested that this memorial resolution be incorporated into the official minutes of the Missouri S&T General Faculty Meeting of May 4, 2021, and that copies be sent to his wife and children.

Respectfully submitted,

Venkat Allada, K. Krishnamurthy, Keith Nisbett, Dave Riggins and Don Wunsch

**Memorial Resolution
Gordon Eugene Carlson**

Dr. Gordon Carlson was a gentleman, a scholar and a good friend to the students, faculty and staff of this university. We were fortunate he chose to spend so much of his career with us, and mourn his passing.

A Kansas farm boy, Gordon was born during the great depression on a small farm outside of McPherson, Kansas. It was there that he developed what would become a life-long love of cars and farm machinery. He personally restored multiple antique automobiles, and was often seen about town in them. A highlight of warm spring days was spotting one of these beauties in the faculty parking lot. In the eyes of many students, this marked him as a real engineer.

Dr. Carlson was of course, a real engineer, even without his prodigious automotive reconstruction credentials. He attended Kansas State University in the 1950's and 60's, earning a B.S., M.S., and ultimately Ph.D. in electrical engineering in 1964. For the next six years of his career, he was a member of the technical staff in the Advanced Analysis Department, Research and Engineering Division, at the Autonetics Division of North American Rockwell Corporation.

Gordon joined the electrical engineering faculty of the University of Missouri - Rolla in 1970, retiring as a professor of electrical and computer engineering in 2000. During much of the 1970's and early 80's he was a consultant to the U.S. Army Missile Command, Redstone Arsenal Alabama. Dr. Carlson specialized in radar image correlation for navigation.

A prolific author, Gordon not only produced numerous scholarly research articles, but also wrote a widely used textbook in Signals and Linear System Analysis. He gave generously of his time and talents to the university community. Gordon advised students, coordinated the communications area of the electrical engineering department, and was a leading force during the expansion of Emerson Electric Company Hall.

He was a recipient of a UMR Faculty Excellence Award, and received awards of excellence from the Institute for Electrical and Electronic Engineers and the Haliburton Education Foundation. Dr. Carlson was a senior member of the IEEE, and a member of the Sigma Xi, Phi Kappa Phi, Pi Mu Epsilon, Eta Kappa Nu, Sigma Tau and Tau Beta Pi honor societies.

Gordon was an enthusiastic supporter of the fine arts. He and Kathy, his wife of 60 years, rarely missed an event in the Campus Performing Arts Series. They could always be spotted in those coveted isle seats in Leach Theater of Castleman Hall. Gordon was also an active member of the Immanuel Lutheran Church of Rolla, where he led many of the church committees.

Dr. Gordon Carlson was a Professor Emeritus of Electrical and Computer Engineering at Missouri S&T at the time of his passing on January 27, 2021. He is survived by his wife, Kathryn Carlson, sisters Mary Anna Anderson and Carolyn

Haase, children Susan Carlson, Virginia Carlson, and John Carlson, seven grandchildren and two great grandchildren.

It is requested that this memorial resolution be incorporated into the minutes of the Missouri S&T General Faculty Meeting of May 4th, 2021, and that copies be sent to his wife, sisters and children.

Respectfully,

A handwritten signature in cursive script, appearing to read "Kurt Kosbar".

Dr. Kurt Kosbar