

The School of Science

DEAN: Michael A. Palladino, Ph.D.

ASSISTANT DEAN: John A. Tiedemann, M.S.

Monmouth University's School of Science is a community of teacher-scholars actively fostering learning, quantitative reasoning, and scientific inquiry among its majors and among all students. A goal of the School is to lead in the innovative development and delivery of curricula and in providing creative solutions to problems that include significant technical components. Educational programs provide a student-centered learning environment that builds a foundation for life-long learning, critical thinking, and collaborative, technical problem solving. Faculty scholarship interests include: original basic and applied research in a range of disciplines and scholarly work on science education and pedagogy. Undergraduate and graduate students are encouraged to participate in student-faculty collaborative research projects leading to the acquisition and dissemination of new knowledge in the sciences.

The School of Science offers undergraduate degree programs in Biology, Chemistry, Clinical Laboratory Science, Computer Science, Marine and Environmental Biology and Policy – Policy Track, Marine and Environmental Biology and Policy – Biomolecular Track, Mathematics, Medical Technology

and Software Engineering, as well as minors in Biology, Chemistry, Computer Science, Information Technology, Mathematics, and Physics, and concentrations in Molecular Cell Physiology, Advanced Chemistry, Biochemistry, Chemical Physics, Cytotechnology, and Medical Laboratory Science.

The School of Science also offers master's degrees in Computer Science, Software Engineering and Financial Mathematics. The program in Software Engineering is accredited by the Accreditation Board for Engineering and Technology (ABET). The Chemistry, Medical Technology, and Physics department is approved by the American Chemical Society (ACS). All qualified advanced chemistry, biochemistry, and chemical physics degree recipients are eligible to receive ACS certification of their degrees. The degrees in Clinical Laboratory Science and Medical Technology are accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS). All programs of study are directed toward preparing students for working and living in a multicultural, technologically complex, global environment.

Studies in the School of Science provide students with a solid background in the technical aspects of their chosen scientific or engineering field, sufficient to prepare them for further study in graduate or professional programs, or to compete for

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access to employment opportunities in industry or education. Core courses for the non-major stress the nature of the scientific enterprise and the benefits and risks that scientific advances present to society rather than the digestion of large doses of content from the discipline. Both major and non-major courses emphasize the importance of critical thinking and cooperative learning, clarify working to the scientific method in posing and answering questions concerning the natural world, and explore the nature of human problems for which technology may provide solutions.

RAPID RESPONSE INSTITUTE

Barbara T. Reagor, Ph.D. Director, Rapid Response Institute. A Bellcore Fellow and former Telcordia VP of Homeland Security, Dr. Reagor worked for the past 34 years in the fields of National Security Emergency Preparedness, Disaster Prevention & Recovery, Crisis Management, Chemical Contamination, and Network Risk Assessment associated with telecommunications and information technology systems.

William Tepfenhart, Ph.D. Chief Technology Officer for the Rapid Response Institute and Associate Professor in the Department of Computer Science and Software Engineering. Dr. Tepfenhart's experience ranges across a broad spectrum of activities (Government, ATT and MU). He has performed in the role of instructor, researcher, software developer, and author. Trained as a physicist, his areas of expertise include object-oriented software development, artificial intelligence, and software engineering.

James Hammill, Research Scientist for the Rapid Response Institute and a Certified Disaster Recovery Planner. He was co-Chair for the Response and Recovery Chapter with Dr. Reagor for the MIPT publication "Project First Responder". He has also held positions at FEMA and AT&T.

Robert M. Kelly Jr., Adjunct Professor - M.S.E.E. Stanford University. Synthesis of emerging and existing technologies into useful applications; RFID, large scale systems architecture and integration; work in all phases of technology development from the lab to customer support; operations, administration and maintenance (OA&M) of complex computer/communications environments; customer/client and vendor rela-

tionship management especially outsourcing; and processes for quality technology realization and support.

The Rapid Response Institute (RRI) provides research opportunities in support of Homeland Security and Homeland Defense for School of Science faculty and adjuncts as well as high school teachers and students, undergraduate and graduate students, and contracted or visiting scientists. This software engineering-based institute aims to develop decision-enhancing aids that enable early and enhanced threat identification and appropriate response in the support of the chemical, biological, radiological, nuclear, and explosive events. These same techniques can be applicable to homeland security/counter-terrorism, natural disaster, environmental crisis, and pandemic scenarios, and this duality provides an open, accessible, and reasonably inexpensive test bed for the development of prototypes being designated to meet both domestic and military needs.

URBAN COAST INSTITUTE

Anthony B. MacDonald, Director, Urban Coast Institute. Mr. MacDonald brings over twenty-five years of executive and policy experience in coastal and ocean law and policy at the local, state, and federal level to the UCI.

Jennifer DiLorenzo, Sustainable Coastal Communities Liaison, Urban Coast Institute. Ms. DiLorenzo is a marine scientist who has worked with the New York and New Jersey Legislatures, the New Jersey Department of Environmental Protection, and the private sector.

James Nickels, Marine Scientist, Urban Coast Institute. Mr. Nickels has worked for over twenty-five years on marine research, monitoring, surveying, and field operations in both the public and private sectors.

The Urban Coast Institute (UCI) serves the public interest as a forum for research, education, and collaboration that fosters the application of the best available science and policy to support healthy and productive coastal ecosystems and a sustainable and economically vibrant future for coastal communities. The UCI efforts focus on the following program areas:

- Coastal Law and Policy
- Coastal Watershed Management
- Coastal Communities and Economies
- Regional Ecosystem Management

BIOLOGY

Dennis Rhoads, Chair, Department of Biology

Donald Dorfman, Professor. Ph.D., Rutgers University. Specializes in ichthyology, ecology, and marine biology. Current research involves population estimates of fishes, fish physiology, bioaccumulation of heavy metals, responses of fishes to variations in environmental parameters, and research on avian hemoglobin, fish parasites, and structure of gonopodia of live-bearing fishes.

Ellen Doss-Pepe, Instructor. Ph.D., Rensselaer Polytechnic Institute. Specializes in biochemistry, protein folding and misfolding, and protein degradation. Current interests include the relationship of protein misfolding and degradation as underlying causes of neurodegenerative diseases.

Ivan A. Gepner, Associate Professor. Ph.D., Princeton University. Specializes in genetics and developmental biology. Current interests include computer applications in biology, especially computer modeling and simulation of natural phenomena.

Ursula A. Howson, Assistant Professor. Ph.D., University of Delaware. Specializes in marine ecology, ichthyology, and invertebrate zoology. Current research includes physiological ecology and behavior of larval and juvenile fishes, and image-based analyses of ontogenetic changes in their morphology.

Dorothy Hutter Lobo, Associate Professor. Ph.D., The Catholic University of America. Specializes in cell and molecular biology, and signal transduction pathways. Current research includes the regulation of stress signaling pathways during cell proliferation and programmed cell death.

Kathryn A. Lionetti, Associate Professor. Ph.D., State University of New York at Stony Brook. Specializes in microbiology and molecular biology. Current interests include recombinant DNA technology, apoptosis, and applications of molecular biology in clinical diagnostic procedures, emerging viral diseases.

James P. Mack, Professor. Ed.D., Teachers College, Columbia University. Specializes in anatomy and physiology, vitamin A and membranes. Current research includes antibiotic screening of plants from Belize and spread of human pathogens by migratory birds, and antimicrobial activity of essential oils.

Michael A. Palladino, Dean, School of Science and Associate Professor. Ph.D., University of Virginia. Specializes in male reproductive biology and cell and molecular biology. Current research includes antimicrobial properties of male reproductive organs, and cellular and molecular responses to ischemia and hypoxia in the mammalian testis.

Dennis E. Rhoads, Professor. Ph.D., University of Cincinnati. Specializes in biochemistry and neuroscience. Current research on neurobiology of alcohol and drug abuse.

John A. Tiedemann, Assistant Dean of the School of Science and Specialist Professor of Biology. M.S., Florida Institute of Technology. Specializes in marine ecology, coastal zone management, environmental science, and marine and environmental education. Current applied research involves watershed management strategies and best management practices for coastal nonpoint source pollution.

The Biology curriculum is designed to give students a basic diversified background in the life sciences and prepare them for graduate work, professional school (medicine, dentistry, podiatry, chiropractic, etc.), laboratory work in government and industry, and careers in teaching.

Student Honor Society: Beta Beta Beta, Chi Eta Chapter

Department Honors can be earned in Biology based on the following criteria being met:

- Achieving a 3.3 or better overall GPA with a 3.5 or better GPA in biology courses;
- Completing two additional courses at the 300 or 400 level;
- Completing six credits of faculty-directed research and presenting a research thesis.

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BACHELOR OF SCIENCE WITH A MAJOR IN BIOLOGY

Please refer to the following curriculum charts for program requirements. All curriculum charts are detailed and displayed in Appendix "B".

- Bachelor of Science in Biology
- Bachelor of Science in Biology and Education with Endorsement in Elementary Education
- Bachelor of Science in Biology and Education with Endorsement in Secondary Education in Biology

Additional endorsements are available. Please refer to the School of Education or the curriculum charts located in Appendix "B".

BACHELOR OF SCIENCE WITH A MAJOR IN BIOLOGY WITH A CONCENTRATION IN MOLECULAR CELL PHYSIOLOGY

Please refer to the following curriculum chart for program requirements. All curriculum charts are detailed and displayed in Appendix "B".

- Bachelor of Science in Biology with a Concentration in Molecular Cell Physiology

BACHELOR OF SCIENCE IN MARINE AND ENVIRONMENTAL BIOLOGY AND POLICY

Please refer to the following curriculum chart for program requirements. All curriculum charts are detailed and displayed in Appendix "B".

- Bachelor of Science in Marine and Environmental Biology and Policy – Biomolecular Track
- Bachelor of Science in Marine and Environmental Biology and Policy – Policy Track

BIOLOGY DEPARTMENT MINOR

Please refer to the following curriculum chart for program requirements. All curriculum charts are detailed and displayed in Appendix "B".

- Minor in Biology

CHEMISTRY, MEDICAL TECHNOLOGY, AND PHYSICS

William Schreiber, Interim Chair, Department of Chemistry, Medical Technology, and Physics

Azzam S. Elayan, Lecturer. Ph.D., Wesleyan University. Organometallic chemistry. Synthesis and characterization of hybrid (organic-inorganic) polymers and catalytically active organometallic complexes; mechanisms of metal-catalyzed processes, particularly those involving carbon-carbon bond-forming reactions.

Bradley J. Ingebretsen, Lecturer. Ph.D., Clarkson University. Physical chemistry. Mass transport in aerosol systems, the fate of aerosols in the environment and in the respiratory tract, and the physical chemistry of cigarette smoke.

Robin R. Kucharczyk, Lecturer. Ph.D., Yale University. Inorganic chemistry. Organometallic chemistry of molybdenum and approaches to teaching introductory chemistry.

Massimiliano Lamberto, Assistant Professor. Ph.D., University of Southampton (U.K.). Organic chemistry. Small molecule synthesis for the inhibition of telomerase by G-quadruplex DNA stabilization; synthesis of novel chromophoric systems for dye-sensitized solar cells and sensor applications; synthetic methodology.

Kanchana Mudalige, Lecturer. Ph.D., University of Illinois. Analytical chemistry and electronic engineering.

Datta V. Naik, Dean of the Graduate School and Professor. Ph.D., University of Notre Dame. Analytical-inorganic chemistry. Research interests are detection and control of process gases, air quality, spectroscopic methods of analysis.

William L. Schreiber, Lecturer. Ph.D., University of Rochester. Organic chemistry. Organic synthesis, process research, organic photochemistry, odor perception, and chemical education.

Carolyn Supplee, Assistant Professor. Ph.D., The Ohio State University. Inorganic and analytical chemistry. Syntheses and reactivity of transition metal complexes for the development of environmentally benign processes and techniques ("green chemistry") to conduct C-H activation and oxidation chemistry. Characterization of metal complexes and their reaction chemistry utilizing physical and analytical methods.

Danuta Sz wajkajzer, Lecturer. Ph.D., Rutgers University. Biophysical chemistry. Chemistry of proteins and nucleic acids, thermodynamics of drugs binding to DNA, mechanisms of recognition for biomolecules, studies of structure and thermodynamic changes of nucleic acids oligomers.

Tsanangurayi Tongesayi, Assistant Professor. Ph.D., West Virginia University. Analytical chemistry. Speciation, geochemical cycling and bioavailability of heavy metals in the environment, technologies and methods for the removal of toxic heavy metals and their compounds from drinking water, and analytical method development.

Theresa Julia Zielinski, Professor. Ph.D., Fordham University. Physical chemistry. Study of molecular structure and reactivity through computer modeling, intercollegiate cooperative learning, design of modern pedagogical approaches in chemical education, and physical chemistry curriculum design.

The chemistry curricula provide a firm foundation in all of the traditional subject areas of chemistry. Completion of one of the programs is excellent preparation for further professional study in chemistry, in related sciences, in the health professions, or in education. Careers in chemical business, environmental protection, forensics, government, industrial hygiene, information science, patent law, science writing, education, and toxicology are open to those whose initial field of study is chemistry.

The Bachelor of Science in Chemistry provides a core curriculum of all of the traditional subject areas of chemistry while allowing sufficient flexibility to combine it with a second major, a minor, or elective biology courses for pre-medical studies within a total of 128 credits. One example is Chemistry and Education. Completion of that combination makes one eligible to apply for Elementary or Secondary Education endorsement as a chemistry teacher. Completion of two additional courses makes one eligible for the teacher of physical science certification. Other possibilities include chemistry and business, computer, forensics, government, industrial hygiene, information science, medicine, patent law, political science, or science writing.

The Advanced Chemistry concentration is an extended curriculum that provides a career-level foundation in all of the traditional subject areas of chemistry. Students planning to seek employment in

chemical, science-related positions or to pursue graduate study in chemistry or students seeking more in-depth study of chemistry should follow this concentration. Completion of this program is also excellent preparation for health profession careers. Students who complete this program will have their degrees certified by the American Chemical Society.

The Biochemistry concentration provides an introduction to the traditional subject areas of chemistry and biology and explores their relationship in the field of biochemistry. Biochemistry is a rapidly growing field that appeals to students interested in both chemistry and biology. Students planning to seek employment in biochemistry or to pursue graduate study in biochemistry or any of the health-related professions should follow this concentration.

The concentration in Chemical Physics will prepare students interested in graduate work in areas such as nanotechnology and materials science, which are the interface of chemistry and physics.

Departmental Honors can be earned in Chemistry based on the following criteria being met:

- An overall GPA of 3.3;
- A major GPA of 3.5;
- At least 3 credits of CE350 and/or CE499;
- Completion of either: CE371 and CE371L or CE312 and CE312L;
- Completion of thesis with a grade of "B" or higher;
- Public presentation of research.

BACHELOR OF SCIENCE WITH A MAJOR IN CHEMISTRY

Please refer to the following curriculum charts for program requirements. All curriculum charts are detailed and displayed in Appendix "B".

- Bachelor of Science in Chemistry
- Bachelor of Science in Chemistry and Education with Endorsement in Elementary Education
- Bachelor of Science in Chemistry and Education with Endorsement in Secondary Education in Chemistry
- Bachelor of Science in Chemistry and Education with Endorsements in Elementary Education and Physical Science

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- Bachelor of Science in Chemistry and Education with Endorsement in Secondary Education and Physical Science

Additional endorsements are available. Please refer to the School of Education or the curriculum charts located in Appendix “B”.

BACHELOR OF SCIENCE WITH A MAJOR IN CHEMISTRY WITH A CONCENTRATION IN ADVANCED CHEMISTRY (AMERICAN CHEMICAL SOCIETY APPROVED PROGRAM)

Please refer to the following curriculum chart for program requirements. All curriculum charts are detailed and displayed in Appendix “B”.

- Bachelor of Science in Chemistry with a Concentration in Advanced Chemistry (ACS Approved)

BACHELOR OF SCIENCE WITH A MAJOR IN CHEMISTRY WITH A CONCENTRATION IN BIOCHEMISTRY

Please refer to the following curriculum chart for program requirements. All curriculum charts are detailed and displayed in Appendix “B”.

- Bachelor of Science in Chemistry with a Concentration in Biochemistry

BACHELOR OF SCIENCE WITH A MAJOR IN CHEMISTRY WITH A CONCENTRATION IN CHEMICAL PHYSICS

Please refer to the following curriculum chart for program requirements. All curriculum charts are detailed and displayed in Appendix “B”.

- Bachelor of Science in Chemistry with a Concentration in Chemical Physics

CHEMISTRY DEPARTMENT MINOR

Please refer to the following curriculum chart for program requirements. All curriculum charts are detailed and displayed in Appendix “B”.

- Minor in Chemistry

CLINICAL LABORATORY SCIENCES

*William Schreiber, Interim Chair, Department of Chemistry, Medical Technology, and Physics;
Coordinator, Clinical Laboratory Sciences Program*

The Clinical Laboratory Sciences program is offered in collaboration with the University of Medicine

and Dentistry of New Jersey - School of Health-Related Professions. The curriculum is composed of three years of a pre-professional component and fifteen months of a professional component. The pre-professional component is conducted at Monmouth University. The professional component is conducted by UMDNJ-SHRP at the Newark campus and at affiliated clinical/research facilities in a four-semester (15-month) sequence beginning the June following completion of the pre-professional component. Concentrations are available in cytotechnology and medical laboratory science. Monmouth University and the University of Medicine and Dentistry of New Jersey–School of Health-Related Professions jointly confer the Bachelor of Science degree upon successful completion of the professional component. Questions concerning the professional component should be directed to Dr. Rita M. Turkall, Chairman, Department of Clinical Laboratory Sciences, UMDNJ.

BACHELOR OF SCIENCE WITH A MAJOR IN CLINICAL LABORATORY SCIENCES WITH CONCENTRATIONS IN CYTOTECHNOLOGY AND MEDICAL LABORATORY SCIENCE

Please refer to the following curriculum charts for program requirements. All curriculum charts are detailed and displayed in Appendix “B”.

- Bachelor of Science in Clinical Laboratory Science with a Concentration in Cytotechnology
- Bachelor of Science in Clinical Laboratory Science with a Concentration in Medical Laboratory Science

COMPUTER SCIENCE AND SOFTWARE ENGINEERING

*Jiacun Wang, Chair, Department of Computer Science and Software Engineering
Joseph Chung, Unix Administrator and Teacher
Maureen Paparella, Director of Information Technology*

Michiko Kosaka, Associate Professor. Ph.D., New York University. Interests include natural language processing and artificial intelligence.

Francis C. Lutz, Professor. Ph.D., New York University. Interests include environmental engineering and curricular innovation. Active in educational issues through the American Society for Engineering Education and the National Society of Professional Engineers.

James McDonald, Associate Professor. Ph.D., New York University. Interests include software verification and validation, project management and empirical software engineering.

Allen Milewski, Associate Professor. Ph.D., Brown University. Areas of interest include human-computer interactions, contextual communication and awareness, and global software development.

Mohammed S. Obaidat, Professor. Ph.D., Ohio State University. Interests include wireless communications and networks, telecommunications and networking systems, security of network, information and computer systems, security of e-based systems, performance evaluation of computer systems, algorithms and networks, modeling and simulation, high performance and parallel computing/computers, applied neural networks and pattern recognition, adaptive learning and speech processing.

Daniela Rosca, Associate Professor. Ph.D., Old Dominion University. Interests include requirements elicitation, analysis and specification and methodologies for the development and use of business rules.

Richard Scherl, Associate Professor. Ph.D., University of Illinois. Interests include artificial intelligence (especially knowledge representation, automated reasoning, and natural language processing), cognitive science, and information systems.

William Tepfenhart, Associate Professor. Ph.D., University of Texas. Interests include artificial intelligence, software architecture, and software design.

Jack M. Van Arsdale, Associate Professor. M.S.E.E., Polytechnic Institute of New York. Interests include digital and microcomputer-based design, digital phase-lock loop frequency synthesis, and digital synthesis.

Jiacun Wang, Associate Professor. Ph.D., Nanjing University of Science and Technology. Interests include software architecture, Petri nets, real time systems, discrete event systems, telecommunications, and networking.

Cui Yu, Associate Professor. Ph.D., National University of Singapore. Interests include database management systems, spatial databases, information storage and retrieval.

The Computer Science curriculum provides a solid foundation in the computing sciences, preparing students for employment in industry or for graduate school. Software design and development is emphasized along with foundational computing concepts. The higher-level courses enable students to explore a variety of topics, such as databases, networks, artificial intelligence, scripting languages, game programming, Unix administration, and computer security.

Track “A” (Advanced Computing) is especially recommended for students who plan to go to graduate school in computer science or who plan to specialize in scientific computing. Other students may take either Track “A” or Track “B” (Applied Computing). Track “B” give students the flexibility to take a minor in a field outside of science and mathematics.

BACHELOR OF SCIENCE WITH A MAJOR IN COMPUTER SCIENCE

Please refer to the following curriculum chart for program requirement. All curriculum charts are detailed and displayed in Appendix “B”.

- Bachelor of Science in Computer Science – Track “A” – Advanced Computing
- Bachelor of Science in Computer Science – Track “B” – Applied Computing

COMPUTER SCIENCE DEPARTMENT MINOR

Please refer to the following curriculum charts for program requirements. All curriculum charts are detailed and displayed in Appendix “B”.

- Minor in Computer Science

CERTIFICATE IN COMPUTER SCIENCE

Thirty credits in computer science selected in consultation with and approved by an advisor from the Computer Science Department. Grades of “C” or higher are required in all certificate courses. Students entering the certificate program meet regular undergraduate admissions standards.

The Software Engineering curriculum, which is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET), is designed to give students a broad background in both computer and engineering science with a heavy emphasis on those aspects of software engineering that will enable graduates to efficiently participate in the design, development, and deployment of large software systems. Because of the sequential nature of the courses and the number of requirements for engineering majors, careful planning is necessary to complete the curriculum in four years.

The educational objectives of the BSSE program are to prepare software engineering graduates to do the following things within the first few years after graduation from the program:

- Find employment in organizations that develop or use software and/or enter graduate school;
- Participate in teams that are responsible for the specification, design, construction, testing, deployment, maintenance, or use of software systems;
- Develop experience in additional areas of professional specialty which, when combined with their undergraduate education, will continue the path toward lifelong learning;
- Use their engineering, communications, interpersonal, and business skills to further their position in a business, government, or academic environment;
- Critically assess their engineering capabilities and acquire the additional knowledge and skills they need to maintain currency within their evolving work environment;
- Assist their employers' organizations in achieving their business goals.

BACHELOR OF SCIENCE IN SOFTWARE ENGINEERING

Please refer to the following curriculum chart for program requirements. All curriculum charts are detailed and displayed in Appendix "B".

- Bachelor of Science in Software Engineering

SOFTWARE ENGINEERING DEPARTMENT MINORS

Please refer to the following curriculum chart for program requirements. All curriculum charts are detailed and displayed in Appendix "B".

- Minor in Information Technology

CERTIFICATE IN INFORMATION TECHNOLOGY

Please refer to the curriculum charts for program requirements. All curriculum charts are detailed and displayed in Appendix "B".

- Certificate in Information Technology

MATHEMATICS

Joseph Coyle and David Marshall, Co-Chairs, Department of Mathematics

Richard Bastian, Lecturer. Ph.D., Johns Hopkins University. Interests include applied mathematics, mathematics and culture and philosophy of mathematics.

Barbara Lynn Bodner, Professor. Ed.D., Rutgers University. Interests include heuristic process use in problem-solving, integration of computer technology and applications into the curriculum, as well as the study of mathematics from historical and artistic perspectives.

Suneal Chaudhary, Assistant Professor. Ph.D., UCLA. Interests include mathematical and computational finance, economics, and Monte Carlo methods.

Micah Chrisman, Assistant Professor. Ph.D., University of Hawaii. Interests include algebraic topology, low-dimensional topology, and knot theory.

Joseph Coyle, Associate Professor. Ph.D., University of Delaware. Interests include numerical analysis and inverse problems.

Bonnie Gold, Professor. Ph.D., Cornell University. Interests include philosophy of mathematics and innovation in undergraduate mathematics education.

Betty Liu, Professor. Ph.D., University of Maryland. Interests include numerical solution of differential equations and mathematical modeling.

David C. Marshall, Associate Professor, Ph.D., University of Arizona. Field is Number Theory. Interests include algebraic number theory, bilinear and quadratic forms, and undergraduate mathematics curriculum.

Susan H. Marshall, Assistant Professor. Ph.D., University of Arizona. Field is number theory. Interests include number theory, arithmetic geometry, and the learning and teaching of proof.

Wai K. Pang, Assistant Professor. Ph.D., Texas Tech University. Interests include functional data analysis, image analysis, and multi-sample problems in Hilbert spaces

Bruce Ralli, Lecturer. M.S., Georgian Court University. Interests include teaching mathematics and technology in the classroom.

G. Boyd Swartz, Professor. Ph.D., New York University. Interests include computer modeling, object-oriented programming, and integration of computer technology into the curriculum.

The Bachelor of Science curriculum in mathematics is designed to provide an introduction to classical and modern mathematics and to provide a foundation for graduate study or careers in various areas of application.

BACHELOR OF SCIENCE WITH A MAJOR IN MATHEMATICS

Please refer to the following curriculum charts for program requirements. All curriculum charts are detailed and displayed in Appendix "B".

- Bachelor of Science in Mathematics
- Bachelor of Science in Mathematics and Education with Endorsement in Elementary Education
- Bachelor of Science in Mathematics and Education with Endorsement in Secondary Education in Mathematics

Additional endorsements are available. Please refer to the School of Education or the curriculum charts located in Appendix "B".

MATHEMATICS DEPARTMENT MINOR

Please refer to the following curriculum chart for program requirements. All curriculum charts are detailed and displayed in Appendix "B".

- Minor in Mathematics

MEDICAL TECHNOLOGY

William Schreiber, Interim Chair, Department of Chemistry, Medical Technology, and Physics; Coordinator, Medical Technology Program

Monmouth Medical Center
Long Branch, NJ 07740
Louis J. Zinterhofer, M.D., Medical Director
John A. Mihok, Program Director

Jersey Shore University Medical Center
Neptune, NJ 07753
Brian S. Erler, M.D., Ph.D., Medical Director
Perla L. Simmons, Program Director

Successful completion qualifies one for admittance to the examination of the Registry of Medical Technologists. Monmouth University confers the Bachelor of Science degree upon successful completion of the hospital program.

BACHELOR OF SCIENCE WITH A MAJOR IN MEDICAL TECHNOLOGY

The Medical Technology curriculum is designed to give a broad knowledge of the life sciences and to provide specialized experience in performing and understanding numerous standardized and specialized laboratory procedures. Completion of 96 credits of collegiate work prescribed by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) is followed by a 12-month training period in a NAACLS-approved hospital, including:

Please refer to the following curriculum charts located in Appendix "B" for program requirements:

- Bachelor of Science in Medical Technology (for Jersey Shore University Medical Center)
- Bachelor of Science in Medical Technology (for Monmouth Medical Center)

PHYSICS

William Schreiber, Interim Chair, Department of Chemistry, Medical Technology, and Physics

Derek A. Barnes, Professor. Ph.D., Oxford University. Interests include theory of programming languages, artificial intelligence, controlled fusion, and plasma instabilities.

Louis J. Kijewski, Professor. Ph.D., New York University. Fields of interest are electromagnetic theory, mechanics, and quantum mechanics. Most recent interests include many-body problem, optical fibers, computer calculations in atomic physics, and group theory.

S. Mallikarjun, Professor. Ph.D., University of London, U.K. Primary field is liquid state physics. Current interests include study of crystals and international education.

Physics faculty members offer a curriculum leading to a minor in physics, which may be combined with any major. The minor in physics can be combined with a major in chemistry and education to prepare for the Teacher of Physical Science Certification. A minor in physics also complements the interests of students majoring in mathematics, software engineering, and a variety of other fields. The physics faculty also assist the various undergraduate programs by supporting the general education science requirements and by offering specific physics courses required in other majors.

PHYSICS MINOR

Please refer to the following curriculum chart for program requirements. All curriculum charts are detailed and displayed in Appendix "B".

- Minor in Physics