



Job Description

JOB TITLE: MECHATRONICS INSTRUCTOR

LAST REVISED: DECEMBER 2010

*Job Descriptions/Class Specifications are intended to present a descriptive list of the range of duties performed by employees in the job and are **not** intended to reflect all duties performed within the job.*

SUMMARY DESCRIPTION

This position is part of the BAPE Division (Business, Applied Academics & Physical Education) and is expected to develop curriculum and provide lecture and laboratory instruction for students in the study of Mechatronics and other related courses for both on-site and off-site assignments, to evaluate students' performance, to coordinate with faculty and other staff regarding support of hardware and software, to assist in the selection of and coordination with adjunct faculty members, to participate in articulation and School to Career activities, to participate in shared governance and other activities in support of the instructional program, and to perform related work as assigned, all under minimum administrative direction of the Division Educational Administrator. The incumbent may supervise departmental classified/student/temporary staff, as assigned.

REPRESENTATIVE ESSENTIAL DUTIES - *The following duties are typical for this job classification. Incumbents may not perform all of the listed duties and/or may be required to perform additional or different duties from those set forth below to address business needs and changing business practices.*

Lecture Preparation/ Instruction - ESSENTIAL: Review and select learning resources such as textbooks, internet sites, periodicals and manufacturers support material determined to be the most useful and appropriate; review and evaluate new instructional material for content, readability, and cost effectiveness; read literature (books, newspapers, periodicals, and other print and non-print materials) to stay current in the field of mechatronics; develop syllabi of lecture materials; prepare lesson plans to be used in lectures; coordinate lectures with laboratory assignments; prepare multi-media demonstrations to enhance instructional delivery; integrate the use of the computer throughout the instructional program; utilize electrical, mechanical, electronic equipment and materials in demonstrating pertinent principles; prepare handouts and supplemental materials; develop quizzes, tests, and "hands-on" evaluations; evaluate student performance on quizzes, tests, and reports; advise students on matters regarding their academic performance; tabulate scores and assign official grades.
PERIPHERAL: Complete instructional materials order forms; review study guides and other supplemental materials for classroom use; maintain appropriate learning resource center; develop assignments related to current reference materials in learning resource center.

Laboratory Instruction/ Supervision - ESSENTIAL: Select equipment, materials and supplies necessary to run the MECH laboratory; design learning materials used in laboratory assignments coordinated with lectures; determine materials necessary for each laboratory assignment; distribute appropriate materials for student use; design, build, and test experiments for each laboratory assignment; coordinate with Laboratory Technician-Mechatronics for required materials to complete laboratory assignments; verify proper performance of each laboratory assignment prior to student performance; direct Laboratory Technician- Mechatronics in the ordering and storage of laboratory materials and equipment; direct student and/or other temporary help to assist students during the laboratory practice; determine **Supervision** procedures for student notebooks; verify that students have correctly completed laboratory assignments prior to end of experiment; repair equipment, as required.

Student Performance Evaluation -ESSENTIAL: Develop quizzes, examinations, term papers, homework assignments, projects, and laboratory assignments which fairly evaluate student progress in acquiring knowledge of subject material; monitor student activity during examinations and quizzes; read, evaluate, and grade student responses on examinations, quizzes, and projects; assign, read, and evaluate student homework assignments and projects; tabulate scores and assign official grades; advise students on matters regarding their academic



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performance; refer students to appropriate student services (i.e., Extended Opportunity Programs and Services [EOPS], the Learning Skills Center, Tutoring Center, Writing Center, etc.) for specialized testing and tutoring.

Curriculum Development- ESSENTIAL: Review and evaluate curriculum to meet student interests and needs within the parameters of division/department budgets and availability of equipment and materials; work with local businesses, industries, and community groups to plan and develop curriculum to meet employment needs; coordinate with full-time and part-time faculty members to enhance consistency and quality of lecture/laboratory content; evaluate and/or revise courses of study to fit curriculum designs; present proposals for curriculum changes to the Curriculum Committee and/or other shared governance bodies; design degree and certificate programs; research, evaluate and incorporate current technology into curriculum; function as a liaison with advisory committees to determine appropriate curriculum to meet current needs.

Departmental Management- ESSENTIAL: Schedule advisory meetings; develop departmental class schedules for full-time and adjunct faculty members; prepare and manage departmental budget(s) in accordance with established District policies and procedures; assist in record keeping; assist in recruitment and hiring of adjunct faculty members, as requested, in accordance with established District policies and procedures; work with the Laboratory Technician- Mechatronics to determine needs for equipment and supplies; assign work schedules and duties for the Laboratory Technician- Mechatronics; work with the Laboratory Technician- Mechatronics on a day-to-day basis, providing suggestions to accomplish tasks assigned; sign time sheets, approve vacations, etc., for departmental classified staff members and student and/or other temporary help in accordance with established District policies and procedures; provide Dean with information for evaluation of departmental classified staff members and student and/or other temporary help; prepare capital outlay requests; prepare Staffing Committee requests for new positions; coordinate with adjunct faculty members to ensure proper delivery of departmental curriculum. **PERIPHERAL:** Write grants and Vocational and Technical Education Act (VTEA) proposals; interview and hire student and/or other temporary help; prepare annual work plans.

Coordinate Off-Site Programs - ESSENTIAL: Determine need for program delivery; determine appropriate sites for delivery of instruction; determine necessary equipment and materials for program to be offered; procure and set up equipment for delivery of program; recruit, hire, train, and coordinate departmental part-time faculty members in accordance with established District policies and procedures; organize secure storage for materials for ease of access; determine appropriate days and times for delivery of program(s); select, train, and supervise classified, student and/or other temporary help as Laboratory Assistants for off-site programs in accordance with established District policies and procedures: provide appropriate security for materials and equipment at off-site locations.

Economic Development Activities -ESSENTIAL: Participate in activities related to local economic development, as appropriate and feasible; provide input to local businesses regarding program capabilities, as requested; participate in the structuring of economic development activities as it relates to departmental operations; function as a liaison with the Contract Education/and/or the Workforce Development and Continuing Education Division in developing programs to meet community needs; participate on steering committees, as appropriate; assist in development and delivery of industry-specific classes; assist in maintaining quality and consistency of program delivery; evaluate other economic develop models, as necessary.

Articulation- ESSENTIAL: Assist local area high schools and Regional Occupational Programs (ROPs) in developing curriculum to coordinate with community college offerings; function as a resource and attend meetings with representatives from local high schools and ROPs; assist in developing 2+2 articulation agreements with local high schools and ROPs; function as liaison for 2+2 and School to Career programs by developing and administering tests and evaluating performance objectives; provide local schools with appropriate lesson designs to meet departmental standards for articulation; assist local schools with selection of equipment and design of laboratories, as appropriate. Articulate with four-year universities to provide transfer opportunities into appropriate programs.



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Shared Governance- ESSENTIAL: Respond in writing to requests for information, as appropriate; represent department and/or division by serving on District-wide committees, as appropriate and feasible; serve on employee selection committees, as requested; serve as functional member of one or more committees and/or task forces; read and respond to information polls distributed by the Academic Senate and/or other shared governance bodies. **PERIPHERAL:** Attend and participate in departmental staff meetings, division meetings, District meetings, and other activities, including Sierra College Collaborative Process (SCCP) activities; attend Board of Trustees and/or College Council meetings, as necessary; read minutes of shared governance bodies, Board of Trustees reports, and other written material to maintain knowledge of District activities.

Professional Development-ESSENTIAL: Maintain membership and participation in activities of an allied professional organization; attend and present workshops at professional conferences, as approved; attend trade shows and industry-sponsored seminars, as approved; consult with local industry representatives regarding trends in industry and employment standards for training, as appropriate; read literature to keep abreast of current technological developments; participate in faculty/industry internships, as appropriate.

Student Recruitment/Job Placement - ESSENTIAL: Conduct tours of District facilities, as appropriate; visit local area "feeder schools" to enhance visibility of departmental programs; host departmental "open house" activities in conjunction with Career Connections functions; prepare program brochures; provide student career advisement, as appropriate; develop departmental student recruitment materials; interact with local industry representatives to attempt to place departmental students in internships and permanent positions; give presentations to high school classes, as appropriate; assist departmental students to develop resumes and cover letters for job applications, as appropriate; coordinate industry recruitment visitations to the MECH department; solicit and make recommendations for student scholarships from businesses and industries; coordinate student internships with local industries. **PERIPHERAL:** Attend local job fairs, as approved; make presentations to local area school boards, as requested; work with local area high schools and ROPs to develop a pool of potential departmental students.

MINIMUM QUALIFICATIONS:

Licenses/Certifications: ESSENTIAL: Incumbent must possess and maintain (or be able to possess prior to appointment in this position) a valid California Class C or higher driver's, and must also complete subsequent to appointment to this position requirements for a Hazardous Materials Awareness Training Card as issued by the District pursuant to completing District-provided training mandated by Federal and/or State Occupational Safety and Health Administration (OSHA/CalOSHA) "right to know" laws and regulations concerning handling of hazardous materials.

Degrees/Experience: ESSENTIAL: Incumbent must possess a Bachelor's degree AND two (2) years of occupational experience in the discipline AND any certificate or license required to do this work OR an Associate's Degree AND six (6) years of occupational experience in the discipline AND any certificate or license required to do this work OR the equivalent (areas included: Electronics, Mechatronics or related field).

Knowledge of: ESSENTIAL: Electronic, computer, and Mechatronic principles; fundamental physics related to electronics technologies; mathematics as applied to electronics, mechanics, pneumatics and hydraulics technologies; basic circuit configurations; behavior of passive devices; behavior of active devices; integrated linear circuits; integrated digital circuits; microprocessors; microcontrollers, microcomputers, programmable logic controllers, and related programming; digital signal processing; acquisition and interface techniques; industrial control techniques; communication systems; electro-optic systems; robotics; circuit simulation; assembly techniques; fabrication techniques; trouble-shooting methodologies; testing and measurement; state regulations regarding handling and disposal of hazardous waste; shop safety principles; OSHA regulations; sources of continuous re-training to respond to changes in technology; safe lifting techniques.



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Ability to: ESSENTIAL: Teach in lecture mode; conduct classes in a laboratory environment; organize lectures and laboratory elements; develop procedures for laboratories and other student activities; select, use, and repair tools and equipment; organize and budget departmental activities; work with community members, organizations, and advisory committees; supervise staff, including student and/or other temporary help and/or volunteers; provide input for evaluation of performance of classified staff members; design and fabricate printed circuit boards; design and fabricate chassis; operate metal fabrication machine tools; read and understand technical manuals and schematics; use and teach computer hardware and related application programs; develop, implement, and evaluate project-based curriculum; coordinate construction of electronic projects; utilize safety procedures and techniques.

PHYSICAL REQUIREMENTS:

ESSENTIAL: Incumbent must be able to function effectively indoors in a classroom/laboratory environment engaged in work of primarily a moderately active nature and do the following, with or without reasonable accommodation: **Almost constantly:** Utilize vision (near and far, corrected 20/20 with color acuity) to see and use equipment and components, read printed and written materials and computer screens, work with microscopes and drive vehicles while engaged in official travel; stand upright and forward flexing, often for long periods of time, to deliver lectures and assist students in laboratories; lift (from overhead, waist and floor levels, max. 40 lbs.) and carry (max. 40 lbs.) to move equipment and training aids in and out of storage and between classrooms and laboratories; stoop, bend, squat, kneel, and climb ladders and step stools to reach storage and other areas above ground level to work in, under and around large pieces of electronic equipment; push and pull to utilize hand trucks, carts and vehicles to move equipment and supplies; operate specialized stationary and mobile mechatronic equipment.

Frequently: Utilize speech and hearing for ordinary and telephonic conversation and to respond to students' questions; utilize hearing to differentiate between normal and abnormal sounds related to mechatronic equipment to make diagnoses and repairs; utilize manual and finger dexterity and fine motor skills to use tools and equipment to manipulate minute electronic wiring and components and to demonstrate visual aids, wiring, and use of equipment; walk, to move about classroom, laboratory, and campus environs; reach (from overhead and low levels) to demonstrate principles and techniques in a laboratory setting and to pick up tools and equipment from floors and counters; work in areas subject to risk of exposure to dusts, mists, fumes, wet/damp surfaces, moderately high levels of noise, chemicals and caustics, electrical shock, and falling from heights above ground level while using ladders and/or step stools; wear personal protective equipment to protect face, eyes, hands, fingers, and body. **Occasionally:** Work in areas subject to risk of exposure to allergenic plants/materials; wear personal protective equipment (including respirators or other breathing devices) to protect breathing passages, hearing and skin.

Faculty Salary Schedule, subject to placement at hire.

SCFA bargaining unit status.

FLSA exempt.

Class III, Bloodborne Pathogens Exposure Control Program.