# UNIVERSITY OF CALIFORNIA


*Proposals Due: March 28, 2008*

*Apply online at:*

http://flatiron.sdsc.edu/projects/micro


# MICRO History

MICRO was created in 1981 as a partnership between Industry and the State of California to support "innovative research in microelectronics new technology, its applications in computer and information sciences, and its necessary antecedents in other physical science disciplines" at campuses of the University of California. Sponsored research is envisioned to lead to the development of new products and technologies, and sponsored graduate students are expected to attain leadership as technical contributors and entrepreneurs in California industry.

Since its inception in 1981, more than 600 companies have sponsored the MICRO program. In 2007-08, 95 companies contributed approximately $7.7 million in cash and equipment to fund 106 projects. The State of California supplements industrial funds and the University waives its overhead on non-equipment expenditures for both the industrial and the State contributions. In recent years, the State supplement has totaled approximately $3.8 million in cash, while the cash equivalent of the overhead waiver has been in excess of $6 million.

# The MICRO Mission

The MICRO program sponsors and trains graduate students to be the next generation of California industry leaders and entrepreneurs and builds relationships between faculty, graduate students and industry partners by matching California industry gifts and grants with State funds. The MICRO program advances small, innovative projects in all areas of microelectronics and computer science research and applications.

# MICRO Award Overview

**In 2008-09, the MICRO program wishes to encourage junior faculty and other investigators new to the MICRO program to compete for state support of innovative research. Junior faculty may request up to 50% more State matching funds than other, more senior faculty members.**

### Cash pledge

A UC Faculty Investigator, by proposing a project of mutual interest to one or more companies, obtains a pledge of cash contribution to support that research over a period of one or more years.

### Letter of Intent

A company indicates its desire to sponsor a MICRO project in a Letter of Intent sent to the faculty investigator.

### Proposal

The letter must accompany a technical proposal written by the faculty member describing the proposed research and must be submitted by the deadline every year.

A requirement of the program is that a majority of the project supported salaries be allocated to graduate students.

### Peer Review

A technical proposal containing a project description and research strategy is reviewed by experts in industry and academia.

### Award

The State of California will co-sponsor an approved project in two ways: by supplementing the industry contribution with cash, and by waiving the customary university overhead applied to research funds. In certain well-justified cases, the industry contribution may be partly in the form of equipment or software.

After the proposal has been reviewed, the sponsor will be advised of project approval and then will be required to submit a binding letter specifying the transfer of funds to the University.

### Reporting

The MICRO program encourages frequent interaction between the sponsoring company's technical liaison, the faculty investigator, and graduate students. No deliverables are specified except a project report at the conclusion of the project.

# Eligible Research

MICRO helps the California electronics and computer industries maintain their leadership by expanding relevant research and graduate student training and education at the University of California (UC).

The MICRO program is meant to seed an active collaboration between UC researchers and their industrial counterparts. State and industry jointly fund the research projects.

### Relevance

Relevance to industrial activities in microelectronics, computer science, and their applications is the primary criterion for eligibility. While applications of microelectronics and computer science may have a substantial impact in fields such as medicine, biology, mechanical engineering, space science, etc., they are not directly relevant to the goals of MICRO. The program is NOT meant to support short-term product development. Short-term product development and basic research unrelated to applications in the microelectronics and computer industries are ineligible for MICRO awards.

A new project proposal shall identify the elements of the research that support the general mission of MICRO. The proposal application and technical discussion should clearly bring out the relevance to MICRO by emphasizing how the proposed research furthers the state of knowledge in microelectronics and computer science.

### Project Duration

Research may be proposed for a one or two year period (up to 50% of total MICRO funds will be allocated to two year grants). Proposals to fund a project beyond the original one or two-year timeline will be considered but will require a full review.

## UC Investigators

MICRO research proposals must originate from UC Faculty Senate members as Principal Investigators. The Principal Investigators are responsible for preparing their proposals, arranging in advance for industrial support, procuring the Letters of Intent (see below), and informing the cooperating companies of MICRO policies, particularly those concerning binding letters, deliverables, termination, and intellectual property matters.

Principal Investigators who have been funded through the MICRO Program in previous years must be current in their Project Report obligations to qualify for funding consideration.

Principal Investigators are requested to participate in the review process of their peers' MICRO proposals if requested. Failure to comply may result in their elimination from the award process Reinstatement in the program will require Executive Advisory Committee approval.

Multiple, separate proposals by the same Principal Investigator (PI) will be considered if there is clearly no or very limited overlap between the proposed projects. If the range of topics demands it, additional reviewers will be assigned to unusually broad proposals. Because of limited support funds, there will be funding restrictions per PI, calculated according to a regressive formula applied to his/her total industry support. Details of this formula are found in the Guidelines and available online at the MICRO website (http://www.ucop.edu/research/micro/) and during the application process.

MICRO encourages junior faculty to become MICRO Investigators and apply for state support of innovative research. MICRO wishes to enhance collaborations of junior faculty and sponsoring industries by allowing all Investigators who are Assistant Professors at UC to request 50% more University matching funds than other, more senior faculty members.

## Graduate Student Training and Education

An important objective of MICRO is to train graduate students in microelectronics and computer science who, by being involved in the research, will upon graduation help to transfer the research results to California industry, become leaders in established companies, and become the entrepreneurs who form new companies that stimulate the economy of the State.

Graduate student education is supported both through research assistantships funded by the projects and through fellowships granted directly to students in the fields covered by MICRO.

MICRO requires that at least 50 percent of the total salaries funded in a MICRO project must be allocated to support graduate students' salaries.

## Criteria for Award

Proposals will be reviewed by referees selected by the MICRO Executive Advisory Committee. Funding may not be provided to investigators whose Project Report obligations are not current. A detailed technical review based on the following criteria will be the primary basis for decisions on research awards:

- Relevance to MICRO and the potential of the project to fulfill MICRO objectives.
- Quality and originality of the proposed research. Emphasis will be on innovation.

- Contribution of the project to train graduate students at the forefront of technical innovation.
- For renewals, the emphasis will be on progress gained under prior MICRO support.
- Qualifications of Principal Investigator and other investigators.
- Adequacy of facilities for the proposed research.
- Reasonableness of the budget: adequate justification for major expense items; relevance and justification of the valuation of industrial non-cash matching contributions; consonance of the budget with the technical work proposed.
- Available State funds.

It is not possible to fund all meritorious proposals at the level requested. Overall evaluation of the relative merits of different proposals will be based on peer review, as reviewed and normalized by the Executive Advisory Committee.

## Qualifying Companies

A cooperating industrial company must have a relevant research or manufacturing division in California, or the sponsorship of the research by the cooperating company must demonstrably benefit California industry. Foreign companies must have a California subsidiary to qualify, the company's Letter of Intent must originate from the California subsidiary and the technical liaison named therein must be located at that facility.

The cooperating company must designate a technical and a financial representative to act as liaisons between the company and UC researchers.

MICRO does not co-sponsor research projects with other industrial funding agencies such as SRC and Sematech. Government laboratories such as JPL, LLNL, or FFRDC do not qualify as industry sponsors.

## Industrial Contribution

The total industrial contribution from all sponsors participating on a MICRO project shall include a minimum cash component of $10,000. Non-cash components are allowed but only in combination with the minimum cash component. Details of industry non-cash contributions is available in the Guidelines and on the MICRO website: http://www.ucop.edu/research/micro/)

The industrial contribution may be in the form of a gift or grant.

A gift implies no contractual or intellectual property obligations to the industrial sponsor(s), and are subject to UC gift polices (see Contract and Grant Manual, Chapters 9-200 thru 9-600) and conformance with campus-based procedures.

A grant may be in the form of a contract, but for a MICRO contract no deliverables shall be required by the sponsoring company other than a project report, nor may the company terminate the contract prior to the project end date.

Support from different industrial sponsors is not a justification for splitting similar work over several proposals. The Principal Investigator should try to persuade the supporting companies to accept a proposal involving several sponsors.

## Letters of Intent

Each proposal must include documentation of support from the cooperating companies, signed by authorized company representatives. These letters should declare the intent or commitment of the company to provide support specifically for the approved project, and that the funds are for the 2008-09 MICRO program and do not represent funds that would have come to the University under other programs or for other purposes. For example, funds awarded to UC for membership in an industrial affiliate or liaison program for research centers cannot be used as industrial contributions for MICRO projects.

## Delivery of Industrial Contribution

Upon notification of project approval by the MICRO Executive Advisory Committee, the company will be required either to deliver the support promised in the Letter of Intent to the PI's Contract and Grants Office, or to submit an irrevocable Binding Letter of Delivery by an authorized individual before December 31, 2008. The binding letter must acknowledge receipt and acceptance of the Guidelines for MICRO projects, and must indicate the delivery schedule for the industrial contributions. The delivery must be completed by April 15, 2009.

Industrial funds and/or non-cash contributions delivered before the Executive Advisory Committee has approved a MICRO project will count as contributions to that project only if: (a) the funds/equipment were received by the University after December 1, 2007; (b) the delivery is accompanied by a cover letter of commitment stating explicitly that the funds/equipment are for a forthcoming or pending MICRO project, including the name of the PI, the subject matter of the project, and a designated technical liaison, and (c) the funds are held unspent until after approval of the project by the Executive Advisory Committee, and for non-cash contributions, the equipment will be held by the PI who takes responsibility until the project is approved. The cover letter should be in lieu of the Letter of Intent. If a purchase order or contractual agreement will be issued by the company to make its contribution, such award documents should accompany the binding letter for review and acceptance on behalf of UC.

## Intellectual Property Policy

Any patent or copyrighted work resulting from a MICRO project shall be subject to the campus IP Policies.

## University Contribution

The University's contribution is two-fold: (a) the University provides supplemental State funds based on the merits of the proposal, the amount of the industrial contribution, and the amount of funds available (details are given below) and (b) the University waives overhead on industry contributions and State funds.

For 2008-09 MICRO proposals, the maximum University Cash Contributions that can be requested is calculated based on the amount of the sponsoring industries' contribution. The Industrial Contribution is the sum of Cash committed by all industrial sponsors to a project and the Cash Equivalent of all non-cash contributions. The formula for determining the maximum University Cash Contribution is designed to award small- and medium-sized projects with a University supplement at a higher rate than large-sized projects, which are assumed to derive the bulk of their funds from industry. It encourages investigators to collaborate when properly justified, without giving the incentive to a PI to proliferate proposals.

Details of the University Cash Contribution formula are found in the MICRO Guidelines, on the MICRO website and available during the online application process. The Guidelines and Budget Worksheet (attached) were designed to assist the Investigator in calculating the University Cash Contribution and takes into consideration all of the factors described above.

To encourage collaborations with junior faculty and sponsoring industries, MICRO allows all Investigators who are Assistant Professors at UC to request 50% more University Cash Contribution than other, more senior faculty members. For example, if an Assistant Professor raises $50,000 from a sponsoring company, he/she may request in the MICRO Application up to a 1.5:1 match of University Cash Contribution to Industrial Contribution, or $75,000. Senior Faculty may only request up to a 1:1 match for University Cash Contribution for the same level of Industrial Contribution.

## Campus Responsibility

Each campus's Contracts and Grants Office is responsible for reviewing proposals in accordance with applicable UC policies. The Contracts and Grants Office may assist in obtaining binding letters from the cooperating companies for the industrial contributions. The Contracts and Grants Office will process the binding letters and/or award documents and distribute copies to the appropriate offices. When the matching support is a gift, the campus' Contracts and Grants Office will arrange for its acceptance by the appropriate office. The Contracts and Grants Office is also responsible for holding funds received prior to project approval.

**Approval of the MICRO project application must be received from the campus Contract and Grants Office prior to final submission of the MICRO application. Please allow sufficient time to receive the campus approval prior to the application deadline. Approval will be requested through an email, sent to the appropriate Contracts and Grants Officer, containing a link to the application website approval page. Do not wait until the deadline to send the email requesting approval. See the Guidelines and application website for more details.**


## Submitting Proposals

Please note all proposals must be submitted online. The application URL is:

http://flatiron.sdsc.edu/projects/micro

Details for the proposal including formatting and required elements are described in the MICRO Guidelines and are available online during the application process, at the MICRO website, or by contacting MICRO by email at micro@ucop.edu.

For technical assistance and guidance, please contact the MICRO Program Coordinator by email at: micro@ucop.edu or by phone at: (510) 987-0672.

Submissions must be posted no later than 5:00 p.m., Friday, March 28, 2008. All applicants will receive an acknowledgment that their proposal(s) has been successfully submitted.

## Notification and Processing of Awards

Awards will be announced in August 2007. Principal Investigators and campus Contracts and Grants Offices will be notified of projects that have been approved, their funding level and the steps required to have MICRO funds released. MICRO funds will be treated as intramural funding and will be transferred to the Principal Investigator's department, or Organized Research Unit, via the campus Accounting Office. Support from cooperating companies will constitute extramural funding, and will be processed as awards by the campus's Contracts and Grants Office. If the support is given as a gift, its acceptance as such will be handled by the appropriate office on each campus.

Inquiries regarding awards should be directed to the MICRO Program Coordinator.

### MICRO Applications

Apply online at:

http://flatiron.sdsc.edu/projects/micro

**Deadline for 2008-09 MICRO Applications is 5:00 p.m. March 28, 2008**

Information on the MICRO Program, past projects, guidelines, contact information, forms, worksheets and sample letters are available on the MICRO website:
http://www.ucop.edu/research/micro

## MICRO Contact Information

If you have questions about your potential application, the relevance of your research, the industrial contribution process, or any related policies, please contact the MICRO Program at the UCOP Office of Research.

### MICRO Program Coordinator

Jenny Gautier, Ph.D.
University of California Office of the President
1111 Franklin Street, 11th Floor
Oakland, CA 94607-5200
(510) 987-0672

### MICRO Executive Advisory Board Chair

Professor Jean-Luc Gaudiot
University of California, Irvine

### MICRO Policy Board Chair

Professor Karl Pister
University of California, Berkeley

## General Guidelines

The MICRO program is administered by an Executive Advisory Committee comprised of two UC faculty members from each of the participating UC campuses, appointed by the President of the University for a two year term, and collectively representing the various technical areas of the MICRO program. The Executive Advisory Committee is responsible for all technical matters, for the implementation of MICRO policies as set by the MICRO Policy Board (see below), for the distribution of State funds under those policies, and for making policy recommendations to the Policy Board. The Program Coordinator resides at the UC Office of Research and is responsible for the day-to-day operations of the MICRO program. The Coordinator also staffs the Executive Advisory Committee.

The Executive Advisory Committee reports to the MICRO Policy Board, which consists of up to four representatives each from UC, Industry, and State government, also appointed by the President of the University. The Policy Board sets and interprets MICRO policies. It has interpreted the intent of the Legislature by specifying that cooperating companies must have relevant manufacturing and/or research facilities in California or benefit California industry. The Policy Board has also specified that the program stimulate and cooperate with small businesses in the fields covered by MICRO.

Current Executive Advisory Committee and Policy Board members are listed on the MICRO website (http://www.ucop.edu/research/micro).

## Performance and Report Delivery

Performance shall conform to the objectives and budget details provided in the proposal. The period of performance shall be from the date of the approval notice through December 31, 2009. Expenditure of State funds shall be in accordance with University policy. Note that the University funding is for the fiscal year 2008-09 and must be expended (or encumbered in the case of equipment or supplies) by June 30, 2009 unless explicitly extended.

A Project Report is required and must be submitted to the MICRO Program Coordinator by February 1, 2010. Failure to submit a Project Report will result in the withholding of funding on future MICRO projects. In addition, an annual one page Budget Report showing expenditures of both Industry and University funds is required by February 1, 2010.

## University Release of Funds

Following the approval of a project, the University will release 20 percent of its anticipated cash contribution. The remaining 80 percent will be released only upon receipt by the campus Contracts and Grants Office of either the full contribution, or an irrevocable binding letter, or other appropriate irrevocable award documents from the industrial sponsor

The total University cash contribution allocated to a project is based on the assumption that the amount of industrial contribution actually delivered is equal to that promised in the Letter of Intent. If the amount actually delivered is less than the amount initially promised, the University cash contribution will be scaled back proportionately and recalculated. Any surplus University funds resulting from the recalculation must be returned to the MICRO program.

## Binding Letters and Delivery of Industrial Contribution

Upon notification of project approval by the MICRO Executive Advisory Committee, the company will be required either to deliver the support promised in the Letter of Intent to the PI's Contract and Grants Office, or to submit an irrevocable Binding Letter of Delivery by an authorized individual before December 31, 2008. The binding letter must acknowledge receipt and acceptance of the Guidelines for MICRO projects, and must indicate the delivery schedule for the industrial contributions. The delivery must be completed by April 15, 2009.

Industrial funds and/or non-cash contributions delivered before the Executive Advisory Committee has approved a MICRO project will count as contributions to that project only if: (a) the funds/equipment were received by the University after December 1, 2007; (b) the delivery is accompanied by a cover letter of commitment stating explicitly that the funds/equipment are for a forthcoming or pending MICRO project, including the name of the PI, the subject matter of the project, and a designated technical liaison, and (c) the funds are held unspent until after approval of

the project by the Executive Advisory Committee, and for non-cash contributions, the equipment will be held by the PI who takes responsibility until the project is approved. The cover letter should be in lieu of the Letter of Intent. If a purchase order or contractual agreement will be issued by the company to make its contribution, such award documents should accompany the binding letter for review and acceptance on behalf of UC.

The industrial contribution may be in the form of a gift or grant.

A gift implies no contractual or intellectual property obligations to the industrial sponsor(s), and are subject to UC gift policies (see Contract and Grant Manual, Chapters 9-200 thru 9-600) and conformance with campus-based procedures. A PI must request an extension from the campus Contracts and Grants office to expend industry funds beyond two years after the project initial end date of December 31, 2009. Upon approval of the extension, the outstanding funds must be transferred to a gift account which is subject to the campus gift tax. Unexpended industry funds may not be rolled over into a successor project account.

A grant may be in the form of a contract, but for a MICRO contract no deliverables shall be required by the sponsoring company other than a project report, nor may the company terminate the contract prior to project end date. Unexpended industry grants beyond two years from the project end date are subject to the same extension rules as those for gifts, except the extension requests needs to have industry sponsor's approval prior to submission to the campus contracts and grants office.

## Extensions

Requests for extensions must be submitted in writing to the MICRO Program Coordinator (micro@ucop.edu) by November 15th, 2009. All University funding not expended or encumbered by the extended deadline must be returned to the MICRO Program.

All MICRO projects are funded for a one or two year period, and the proposals and budgets should reflect a 12-month or a 24-month period. Unless an extension is approved in, all funds must be expended by the project end date of either December 31, 2009 or December 31, 2010, depending on whether the project spans one or two years.

## Exceptions

Any requests for exceptions to these Guidelines and the Call for Proposal must be submitted in writing to the MICRO Program Coordinator.

## Appeals

Appeals must be submitted in writing (email acceptable) to the MICRO Program Coordinator by October 1, 2008 for consideration by the MICRO Executive Advisory Committee. Appeals received after that date will not be considered. Funding decisions are based on what is submitted in the proposal by the due date and under no circumstances will a proposal be reconsidered on the submission of missing information.

## Approvals

Each campus's Contracts and Grants Office is responsible for reviewing proposals in accordance with applicable UC policies. Prior to submission of the completed application, the applicant will request the approval from the appropriate campus Contract and Grants Officer. The Contracts and Grants Officer can submit the approval online through an emailed link to the application website.

In addition, the applicant will certify that the application information is correct before final submission of the proposal. The Investigators will receive a confirmation notice with a summary of the application details.

Applications will not be considered complete until all approvals are gathered. Please do not wait until just prior to the MICRO application deadline to request the approvals. Please request the approvals in time to receive the approval in an email response before the application deadline.

# Proposal and Application Guidelines

All proposals must conform to the following format, presenting the information given below and be submitted online via the following address:

http://flatiron.sdsc.edu/projects/micro.

Follow instructions below and on the application website to submit the necessary sections of the proposal.

## *Abstract*

The Abstract should be comprehensible to a non-specialist since it will be circulated to University, State and Industry officials, if the proposal is approved for funding. The abstract text should be placed in the appropriate text box in the application. Also enter three to five keywords that collectively describe the research.

## *Relevance to MICRO*

A new project proposal shall identify the elements of the research that support the general objectives of MICRO. The discussion should clearly bring out the relevance to MICRO by emphasizing how the proposed research furthers the state of knowledge in microelectronics and computer science, how the project will expand graduate training and education, and how it facilitates collaborations of faculty and graduate students with industry.

Relevance to industrial activities in microelectronics, computer science, and their applications is the primary criterion for eligibility. While applications of microelectronics and computer science may have a substantial impact in fields such as medicine, biology, mechanical engineering, space science, etc., they are not directly relevant to the goals of MICRO. The program is NOT meant to support short-term product development.

## *Investigators*

List the Principal Investigator (PI) and any Co-Investigators (co-PI) with corresponding percentages of time responsible for the proposed MICRO project. Include details of Investigator contact information and title.

### Junior Faculty Incentive

MICRO encourages junior faculty to become MICRO Investigators and apply for state support of innovative research. MICRO wishes to enhance collaborations of junior faculty and sponsoring industries by allowing all Investigators who are Assistant Professors at UC to request 50% more University Cash Contribution that other, more senior faculty members. See details below.

### Multiple Proposals per Principal Investigator

Multiple, separate proposals by the same Principal Investigator will be considered if there is clearly no or very limited overlap between the proposed projects. If the range of topics demands it, additional reviewers will be assigned to unusually broad proposals. Because of limited support funds, there will be funding restrictions per PI, calculated according to a regressive formula applied to his/her total industry support. Details of this formula are found in the Budget Guidelines below and available online at the MICRO website (http://www.ucop.edu/research/micro) and during the application process.

### Qualifications of Key Personnel

This section must summarize the qualifications of the PI and co-investigator(s) and of others who will be involved in the project.

In proposals involving co-PIs, the role of each faculty investigator in the proposed research must be described. The percentage of effort and budget responsibility for each co-PI must be stated. Without this information, the proposal will be considered, for budgetary purposes, as a single investigator project. A description of applicable research experience on similar projects, other technical accomplishments, and educational background of all the investigators must be given in a brief curriculum vitae. Each curriculum vitae should be approximately two pages in length -- not exceeding three pages -- and should list publications relevant to the proposed research, as well as names of past graduate students who have received their degrees on the basis of similar research.

## *Project Details*

Projects details must be prepared according to the specifications outlined and in the order below; the final document will be uploaded and submitted per the user instructions on the application website.

1. **Title Page and Abstract**

   As a cover sheet, please list the project title, investigators, industry sponsors and abstract as shown in the sample Title Page.

2. **Table of Contents and List of Table and Figures**

3. **Introduction**

   This section shall include a brief general discussion of the technical problem(s) to be investigated.

4. **Technical Discussion**

   This is the major portion of the proposal. It should be presented concisely and at the same time be detailed enough to indicate the significance and merits of the proposed research. It should contain the information requested, clearly numbered as given below:

   a. **Detailed Statement of the Problem**

   The elements of the problem shall be described and the elements that are critical to the solution of the problem shall be clearly identified.

   b. **Progress Report for Continuation Projects**

   Reviewers will be asked to judge continuing projects on their progress, continuing relevance to MICRO objectives and innovation.

   Proposals for continuation projects must contain a detailed progress report demonstrating reasonable progress for the past year, which will serve as the backbone for the evaluation of the proposal. For projects whose predecessor projects were initiated more than one year ago, the proposal must describe the project's progress since January 1, 2007 and include a cumulative list of publications growing out of the project and its predecessors, dating back three years or to the beginning of the project, whichever is later.

   For a first continuation of a project initiated during the preceding year, and for which no substantial results can be reported yet by the proposal deadline, a detailed description of work initiated and underway should be given, along with any progress that can be noted. For continuation projects with multiple PIs, the contributions of each PI should be clearly stated.

   c. **Proposed Work**

   A complete description of the approach to the solution of the problem must be given. Experiments, simulations, tests, and required facilities must be described. The relevant scientific principles and techniques on which the solution of the problem depends must also be presented. This section should conclude with a statement of work. If the scope of work is expected to take multiple years, clearly describe what is planned for the coming year.

5. **Current and Pending Support**

   The focus of the MICRO project should be different from that of any other project for which the PI has support or is requesting support. If the proposed project is related to a currently funded or a pending project, the relationship and the value added by MICRO funding must be clearly stated and specific research outcomes must be set forth in the proposed MICRO research. All current and pending support of the PI(s) must be listed, giving the title of the project, the funding agency, the amount of award received (or requested), and dates of the contracting period. In addition, in the case of support received or pending from the company sponsoring the current proposal, it must be clearly stated whether the proposed company funding of the MICRO project is in addition to previously committed support.

The Introduction and Technical Discussion sections of the Project Details together shall not exceed 15 pages, including figures and tables. Proposals exceeding the page limit may be disqualified.

## *Industry*

The cooperating company or companies shall be identified and addresses of its (their) relevant manufacturing facilities in California must be given. List the names of the technical and financial liaison persons from each cooperating company.

Input the total industrial contribution from all sponsors participating on the proposed MICRO project. The minimum industry cash contribution is $10,000.

If the minimum $10,000 industry cash component is provided, non-cash industry contributions to the research project are allowed as long as specific criteria are met. See below Table 1 and the

guidelines for determining the no-cash assessed values and MICRO cash-equivalent below for details.

### Letter of Intent

A Letter of Intent from each sponsor supporting the budget must be included in the proposal application. These letters, signed by authorized company representatives, should declare the intent or commitment of the company to provide support specifically for the approved project, and that the funds are for the 2008-09 MICRO program and do not represent funds that would have come to the University under other programs or for other purposes.

The letter should follow the sample format suggested on the MICRO website and attached to the Guidelines. The company is free to add additional statements, such as a payment delivery schedule. However, restrictive or conditional clauses may cause the proposal to be disqualified if, in the judgment of the Executive Advisory Committee, these clauses are incompatible with MICRO policies or with University policies in general.

If an industrial sponsor's contribution contains non-cash items, a Non-cash Contributions questionnaire, completed and signed by the sponsors, must be attached to the Letter of Intent and included in the application.

The company should send the Letter of Intent directly to the PI, not to the Executive Advisory Committee or the Program Coordinator. Late Letters of Intent will not be accepted.

### Assessed Value of Non-cash Contributions

If the minimum $10,000 industry cash component is provided, non-cash industry contributions to the research project are allowed as long as specific criteria are met. (See below.) In that case, the attached questionnaire, Non-cash Contributions, must be filled in by the sponsoring companies and submitted with the Letter of Intent. Item 1.5 of the form needs to be filled in by the PI if more than one piece of the same or a similar item is offered. In addition, a detailed justification of the need for the equipment or software must be given in the Budget Justification section of the application.

For the purpose of determining the level of University cash contribution, industrial non-cash contributions must not be valued at "market value" or "list price," but at the lowest cost at which the item would be available to university customers qualifying for maximum academic discounts (see 1.3 on the questionnaire Non-cash Contributions). The equipment must match the needs of the project. It is crucial to provide the appropriate justification of the use of non-cash contributions in the body of the proposal.

### Non-cash Contributions – Equipment

In combination with a minimum $10,000 cash contribution, the MICRO Executive Committee will also consider industrial contributions in the form of state-of-the-art equipment that is integral and essential to the proposed research, provided the equipment is new, "off-the-shelf," and is part of or closely related to the sponsor's current product line. To qualify, the equipment and its role in the proposed research must be fully described and justified in the proposal. Cash provides more flexibility to carry out the research and is ultimately more valuable than non-cash contributions. The latter are valued as a certain percentage of the lowest cost at maximum academic discounts. (See Assessed value of Non-cash Contributions section.)

### Non-cash Contributions – Software

Non-cash contributions in the form of software will be treated either as a service or as equipment, depending on the term of the software license and the functionality period of the software. One-year software licenses that expire at the end of the

**TABLE 1**

| ASSESSED VALUE: | MICRO CASH EQUIVALENT: |
|---|---|
| Less than $50,000 | 50% |
| $50,000 to $150,000 | $25,000 + 15% of amount over $50,000 |
| Above $150,000 | $40,000 + 5% of amount over $150,000 |

MICRO project are treated as a service, which normally does not qualify for a cash equivalent (see below). To qualify, a software license and the functionality of the software must extend at least two years beyond the end of the MICRO project. (For details see Part II (Software) of the questionnaire "Non-cash Contributions" attached to this document). As with all non-cash contributions, the role of the contributed software in the proposed research must be fully described and justified in the proposal, including justification for the number of copies of donated software. For software to qualify, the project must also have a minimum $10,000 cash contribution.

### Non-cash Contributions – Small Businesses

Other types of industrial contributions (e.g., facilities usage, samples, services, etc.) normally do not qualify for having a cash equivalent. Such contributions may be considered only if they are made by small businesses (50 employees or less), and it is clear that they are essential to the project, uniquely available from the cooperating company, and are properly valued. The usage of such services must be carefully justified in the proposal.

### Cash Equivalents for Non-cash Contributions

Given the Assessed Value of all non-cash contributions from a single industrial sponsor of a project, the MICRO Cash Equivalent is calculated using the following Table 1.

The Assessed Value should be entered in the proposal application. Its Cash Equivalent will be calculated using the formula in Table 1 and listed in the application as the Industry Cash Equivalent. Please use Table 1 to verify the computed Cash Equivalent. The Cash Equivalent is added to any actual cash contributions to the project, and their sum is used to calculate the maximum University Cash Contribution, described below.

## *Budget Guidelines*

A detailed budget for a 12-month period ending no later than December 31, 2008 must be given on a single sheet, following the guidelines spelled out in detail in the Budget Guidelines below. See budget sample.

The budget should be separated into two major categories: salary costs and other direct costs. Justification for major equipment and other non-salary items must be given in Budget Justification section of the application. Disallowed funds will be subtracted from the amount awarded to the project.

### Salary Costs

Faculty, technical staff, and administrative salaries should reflect a reasonable balance with the proposed level of graduate student support. At least 50 percent of the total salaries must be allocated to support graduate students' salaries. Moreover, administrative and technical support salaries shall not exceed 5 percent of the total salaries. Personnel are not supported full time under the MICRO program. Partial support not to exceed 25 percent time for research professionals and 33 percent time for adjunct faculty and postdocs will be considered.

A maximum of two months summer salary across all projects submitted by a Principal Investigator is allowed for Academic Senate faculty. MICRO funding cannot be used to supplement sabbatical leave salary or buyouts for teaching. Nor can it be used for special leave salary, unless it is clearly demonstrated in the proposal that a leave from regular faculty duties will further the quality and scope of research.

Funding for graduate student tuition and fees are allowed, including out-of-state tuition, provided: (a) the student is supported at a level of at least 25 percent of full-time, and (b) at least half of the student's annual support comes from MICRO.

### Other Direct Costs

General expenditures, including office equipment, furnishings and infrastructure fees that are not specifically targeted to the proposed research are not allowed.

Computer systems support charges, not to exceed $50 per month, are allowed for each user supported at 49 percent time or greater on the grant; active PIs are allowed $600 per year.

Foreign travel may be charged only to the industrial funds, after proper justification by the PI and approval by the Technical Liaison. Since the University's match includes the indirect research costs, no indirect-cost line is necessary in the budget.

### Explanation and Justification of Budget Items

Any major non-salary expenditure item in the proposed budget must be adequately justified, or that item may be disqualified by the Executive Advisory Committee. A proper justification includes

both: 1) a statement of the item's relevance to the program and 2) a breakdown of the expenses or other computational base used to arrive at the listed amount. More specifically, items in need of justification include the following: (a) equipment costing more than $3,000, (b) any non-salary line item above $2,000 that is not broken down into smaller items within the budget itself and (c) for any recharge item above $2,000 for which the computational basis is not adequately specified. This includes items such as clean-room charges, network access fees, etc.

Since it is the intent of the MICRO Program to provide research opportunities for graduate students, the involvement and number of graduate students in the project must be adequately explained and justified. The number of graduate students should be commensurate with the scope of the proposed project.

These and any other budget items requiring justification should be detailed in the Budget Justification in the proposal application in the appropriate section following the budget. See sample justification of budget items.

### Calculation of University Cash Contribution

For 2008-09 MICRO proposals, the University Cash Contributions requested in the budgets must not exceed the amount calculated from Table 2. The Industrial Contribution is the sum of Cash committed by all industrial sponsors to a project and the Cash Equivalent of all non-cash contributions.

This method of allocating University funds awards small- and medium-sized projects with a University supplement at a higher rate than large-sized projects, which are assumed to derive the bulk of their funds from industry. It encourages investigators to collaborate when properly justified, without giving the incentive to a PI to proliferate proposals.

The attached MICRO Budget Worksheet was designed to assist the PI in calculating the University Cash Contribution and takes into consideration all of the factors described above. However, it is not required that the worksheet be included with the proposal.

The University Cash Contribution is calculated for each Investigator across all proposals in which that PI will participate. The following four examples demonstrate how this allocation formula is applied to cover most cases.

1. A PI submitting only one single-investigator proposal should directly use Table 2 to calculate the maximum University Cash Contribution eligible for that proposal.
2. A PI submitting more than one single-investigator proposal must use Table 2 to calculate the maximum University Cash Contribution on the sum of all Industry Contributions to all proposals. A fraction of the calculated amount must be allocated to each proposal, in proportion to the industry contribution toward that project relative to the sum of all Industry Contributions.
3. Multiple PIs submitting one joint proposal must pro-rate the total Industry Contribution for each PI according to the level of effort specified in the proposal, compute the University Cash Contribution per PI using Table 2, and sum the results to obtain the maximum University Cash Contribution for the proposal.

   For proposals where the Investigators are a mix of junior and senior faculty, the incentive applies only to that percentage of the project

**TABLE 2**

| INDUSTRIAL CONTRIBUTION: | MAXIMUM UNIVERSITY CASH *: |
|---|---|
| $50,000 or less | 100% |
| $50,001 to $100,000 | $50,000 + 75% of amount over $50,000 |
| Above $100,000 | $87,500 + 20% of amount over $100,000 |

***Junior faculty PIs multiply calculated Maximum University Cash by 1.5**

for which the Assistant Professor is responsible. For example, if an Assistant Professor as co-PI has 30% project responsibility, pro-rate the Industry Contribution as stated in the previous paragraph using Table 2 and calculate the University Cash portion for the 30% attributed to the junior faculty. Next, multiply only that portion by 1.5 and add to the other Investigators' portions to come up with the maximum University Cash.

4. Each PI appearing on more than one proposal with co-PIs must pro-rate the total Industry Contribution for each proposal according to his/her specified level of effort, sum these pro-rated amounts across all proposals, and then calculate the maximum University Cash Contribution for that PI from Table 2. This amount must then be redistributed to each proposal proportional to the pro-rated Industrial Contribution. The process is repeated for every PI. The sum of these amounts calculated for all PIs on a proposal will constitute the maximum University Cash Contribution for that proposal.

### Incentive for Junior Faculty PIs

PIs who are Assistant Professors may request up to 50% more University Cash. Junior faculty may multiply their Maximum University Cash contribution request as calculated by Table 2 (and pro-rated as described in the multiple investigator rules above) by 1.5 to request a higher amount of matching funds from the University.

## Reviewers

Enter the names, contact information and subject-area-expertise keywords of five potential reviewers who have current expertise in the area of the proposal.

Applicants must exclude from this list anyone who may have a conflict of interest, such as former graduate students, advisors, direct collaborators, industrial sponsors, campus colleagues, etc. The names of suggested reviewers will go directly into a database of possible reviewers in the area of the proposal.

### MICRO Applications

Apply online at:

http://flatiron.sdsc.edu/projects/micro

**Deadline for 2008-09 MICRO Applications is 5:00 p.m. March 28, 2008**

Information on the MICRO Program, past projects, guidelines, contact information, forms, worksheets and sample letters are available on the MICRO website:
http://www.ucop.edu/research/micro

## MICRO Contact Information

If you have questions about your potential application, the relevance of your research, the industrial contribution process, or any related policies, please contact the MICRO Program at the UCOP Office of Research.

### MICRO Program Coordinator

Jenny Gautier, Ph.D.
University of California Office of the President
1111 Franklin Street, 11th Floor
Oakland, CA 94607-5200
(510) 987-0672

### MICRO Executive Advisory Board Chair

Professor Jean-Luc Gaudiot
University of California, Irvine

### MICRO Policy Board Chair

Professor Karl Pister
University of California, Berkeley

**SAMPLE TITLE PAGE**
[Include all text within the margins shown]

**PROJECT TITLE**

PRINCIPAL INVESTIGATOR: Professor XX
Department of XX
University of California, Campus City, State Zip

CO-PRINCIPAL INVESTIGATOR(S):

COOPERATING COMPANY(S): Sponsor(s)

***ABSTRACT***

This work concentrates on extending our previous research in two areas, which are some of the most topical challenges at the frontier of analog IC design. The first research effort described is on a new architecture proposed for the implementation of a CMOS 10 bit, 100 MS/s A/D converter, which would advance the state of the art of A/D conversion in this technology, and enable emerging applications such as high definition image processing and medical signal processing. The second research project extends our previous work on low-power, high speed signal processors *for* disk drive read channels to adaptive equalization and clock recovery in partial response, maximum likelihood detection systems, two of the most challenging functions in realizing the improvements offered by these advanced signal processors. We believe that analog implementations of these read channels will offer the lowest power dissipation, making them suitable *for* use in battery operated computers.

Keywords: ADC, CMOS Mixed Signal, Read-Channel, Equalizer, Disc Drive

# SAMPLE LETTER OF INTENT*

[LETTERHEAD OF THE COMPANY]

[Date]

MICRO Executive Committee
c/o PI
Department
University of California, Campus
City, CA ZIP

Under the terms of the MICRO Program for the academic year 2007-08, it is the intent of *[name of the company]* to support the research project *[title of the proposal]* proposed by *[name of the PI]*, University of California, *[name of campus]*. We intend to make the following contributions on a cost-sharing basis with the University of California in the form of a [*gift/grant* (select one)]:

Cash:

Equipment (List the model number and market value):

Other (explain):

Delivery schedule for equipment:

The technical liaison for this project from our company is [*name of liaison*], and the financial point of contact is [name of financial liaison].

Yours Sincerely,

*[name and title of signer]*

cc: *[name of the PI]*

***The company should send the Letter of Intent directly to the PI and not to the MICRO administration. All letters of intent must be attached to the proposal.**

**SAMPLE BINDING LETTER OF DELIVERY**
**(GIFT OR GRANT)**
[LETTERHEAD OF THE COMPANY]

[Date]

Professor XX
Department of XX
University of California, XX
City, State Zip

**[Paragraph for Binding Letter of Delivery of a Grant]**

Having received notification of the award by the MICRO Executive Committee on project #07-XXX. [*title of the proposal*] proposed by [*name of the PI*], University of California, [*name of campus*], [*name of company*] hereby commits that it will contribute a sum of $xxxx to support this research. The contribution is being given in the form of a grant.

**[Paragraph of Binding Letter of Delivery of a Gift*]**

Having received notification of the award by the MICRO Executive Committee on project #07-XXX, [*title of the proposal*] proposed by [*name of the PI*], University of California, [*name of campus*], [*name of company*] hereby commits that it will contribute a sum of $xxxx to support this research. The contribution is being given in the form of a gift, and we waive the rights to any intellectual property that may result from this project.

The contribution
[*is enclosed*]
[*will be delivered by (date*)]
[*will be delivered before April 15, 2008 in accordance with the guidelines.]*

[*Name of company*] has received and accepts the 2007-08 Guidelines which outlines the terms which this contribution is accepted.

Sincerely,

[*Authorized company representative*]

*There are no contractual or intellectual property obligations on contributions given as gifts.

# SAMPLE BUDGET

## I. BUDGET

8/1/07 – 7/31/08

| SALARIES | | Mos. | % | |
|---|---|---|---|---|
| 1. Principal Investigator - @ 1/9 annual salary | Summer mos. | 1 | 100 | $ 8,308 |
| 2. Graduate Student Research 2 @ $3,054/mo. | | 11 | 49 | 32,922 |
| | | | **SALARIES SUBTOTAL** | 41,230 |

| BENEFITS | | |
|---|---|---|
| 1. Worker's Compensation Insurance for GSR @ 1.32% | Base sum: $41,230 | $ 544 |
| 2. Composite Rate for PI @2.91% | Base sum: $8,308 | 242 |
| 3. Graduate Student Health Insurance | Base sum: $282/qtr | 1,692 |
| 4. GSR Tuition and Fee Remission | Base sum:@ $1,489/qtr, in-state | 4,467 |
| | @ $4,055/qtr, out-of-state | 12,165 |
| | **BENEFITS SUBTOTAL** | $ 19,110 |
| | **TOTAL SALARY COSTS** | $ 60,340 |

**TRAVEL**

PI or GSR to attend professional East Coast conference @ $1,400/trip, airfare @ $900/trip, 3 days per diem @ $100/day, rental car & registration @ $200/trip. $1,400

**OTHER DIRECT COSTS**

| | |
|---|---|
| 5. Communication and Publications Costs | $ 1,613 |
| 6. Cleanroom Recharges (see item J) | 5,171 |
| 7. MBE Supplies and Operating Expenses (see item J) | 17,076 |
| 8. Equipment (see item J) | 6,000 |
| 9. Computer Support Charges ($50 x 12 x 3) | 1,800 |
| **Other Direct Costs Subtotal** | $ 31,660 |
| **TOTAL COST** | **$ 93,400** |

| | |
|---|---|
| University of California | $38,400 |
| Sponsor (cash) | $20,000 |
| Sponsor (cash) | $20,000 |
| Sponsor (cash) | $15,000 |
| Total | $93,400 |

# SAMPLE JUSTIFICATION OF BUDGET ITEMS

## CLEANROOM RECHARGES

To fabricate the proposed devices our cIeanroom facilities must be used. The cIeanroom recharge is based on two users, charged according to the following cost-based recharge algorithm currently in use at UCSB:

| | |
|---|---|
| One-time fee for new users: | $1,000 |
| Access fees ($950/quarter, includes 20 free hours/quarter): | 3,800 |
| Excess hours ($18.56 x 20 hours) | 371 |
| Total, per user, per year | $5,171 |

Note: The access fee per user depends on the number of users; the figure given is for two users.

## MBE SUPPLIES AND OPERATING EXPENSES

The proposed devices require wafers grown in our MBE facility. The charge of$17,076 is based on the annual cost per user ($8,538 of operating the MBE machine used in this research, as it was actually encountered during 2000), broken down as follows:

| | |
|---|---|
| Liquid nitrogen | $2,426 |
| Wafers | 2,231 |
| MBE machine-specific expenses (mostly maintenance) | 2,739 |
| Other MBE lab non-office expenses (chemicals, etc.) | 823 |
| MBE office expenses | 319 |
| Total, per user, per year | $8,538 |

## EQUIPMENT

The MBE machine used in this research is seven years old. One of the effusion cells is defective and needs to be replaced, at an estimated cost of $6,000

# NON-CASH CONTRIBUTIONS

If the support by the sponsoring company contains non-cash items, a copy of this form must be completed by the company and attached to the Letter of Intent, if the non-cash contributions are to qualify for State matching funds. If there are several different types of non-cash items, a separate sheet for each should be attached.

TITLE OF
PROPOSAL:_____

PRINCIPAL
INVESTAGATOR:_____

COMPANY PROVIDING THE NON-CASH
CONTRIBUTION:_____

BRIEF DESCRIPTION OF THE NON-CASH
CONTRIBUTION:_____

_____

**I.) GENERAL (BOTH HARDWARE AND SOFTWARE)**

**1.1)** Is the item part of the supporting company's *current* product line?

_____ Yes _____ No

If not, attach a separate sheet giving complete details including the basis for evaluation.

**1.2)** State the company's estimate of the market value of the contribution, after applying all applicable academic or other discounts.

$_____

**1.3)** At what actual discounted cost would this item be available to *other* university customers at universities qualifying for maximum academic discounts?

$_____

**1.4)** Has this item (or any similar item) been provided (or is currently being provided) to selected individuals and/or selected universities, at no cost, or at a cost lower than the lowest cost under (1.2) and (1.3) above?

_____ Yes _____ No

If yes, give details, and explain why the present contribution should not be valued at the same lower cost.

**1.5)** Multiple items of the same type (to be filled in by PI): If more than one piece of the same or a similar item is offered as a contribution, give the page number in the proposal where a detailed justification for the need for multiple pieces is justified.

Page(s):_____

**SIGNATURE OF COMPANY REPRESENTATIVE**

_____**DATE** _____

**2.) SOFTWARE**

The remainder of the form must be completed and signed if, and only if, the company's contribution contains software.

**2.1)** The company will provide, without any charge, any upgrades issued for the software during the duration of this MICRO project.

**SIGNATURE OF COMPANY REPRESENTATIVE**

_____**DATE** _____

**2.2)** Is the software an upgrade or a revision of software for which the PI has received matching funds in previous years?

_____ Yes _____ No

If yes, elaborate.

**2.3)** Does the license (if any) for the software expire after a certain length of time, rather than being a license in perpetuity?

_____ Yes _____ No

If yes, the company hereby explicitly extends the license for two years after the expiration of this MICRO project, and to assure its continued functionality at a level no less than when delivered, even if the cooperation between the PI and the company is not continued past the expiration date.

**SIGNATURE OF COMPANY REPRESENTATIVE**

_____**DATE** _____

In the absence of such an extension, the contribution must be rated as a service provided by the company for the duration of the grant (which does not qualify for being treated as a cash equivalent) rather than as a product contribution to be treated like hardware.

Note that this condition does *not* commit the company to provide *upgrades* to the software past the expiration date of the project, unless this is the only way the functionality can be maintained or restored. Nor will the company be required to maintain the functionality if the loss of functionality is caused by a change in hardware or operating system by the user.

**2.4)** Does the software contain any codes that automatically disable the software or reduce its functionality after a certain time or date?

_____ Yes _____ No

If yes, the company hereby explicitly agrees to disable that code, or to provide the PI with means to maintain or restore the full functionality, for at least two years after the expiration of this MICRO grant, even if the cooperation between the PI and the company is not continued past the expiration of this MICRO grant.

**SIGNATURE OF COMPANY REPRESENTATIVE**

_____**DATE** _____