

## Biocomplexity Research Experience for Undergraduates Request Form Academic Year 2016 – 2017

The Biocomplexity Institute's Research Experience for Undergraduates (BREU) prepares students for professional careers in science and technology fields through hands-on training opportunities. The in-depth training seeks to develop students across demographic areas and to foster innovation and collaboration with researchers and professionals. BREU will provide students with the opportunity to engage alongside cutting-edge research groups at the Institute, and thus engage in active learning at a level that classroom learning alone does not provide. By participating in hands-on research experiences, students will have the opportunity to contribute to creative problem solving; be involved in projects that elicit both engagement and intellectual curiosity; encourage innovation; reward success; and to transform both their curiosity and potential into academic achievement.

Prior to the start of the program, BREU students are matched with a faculty mentor at the Institute. This match will allow students to train alongside a team of researchers whose work aligns with their own research and academic interests. As part of their acceptance into BREU, the student and faculty mentor will develop individualized objectives of learning in accordance with the student's academic level, as well as develop a schedule for performance reports and feedback. To participate in the program, students must have their request to earn research or course credit(s) approved by their academic advisor and academic department according to that department's established procedures prior to the university's 'Last Day to Add Classes' deadline for the given semester.

Following a mentorship match, the faculty mentor must complete this request form – in collaboration with the BREU program coordinator. The completed form along with the departmental approval form for students seeking course credit should be submitted to the BREU program coordinator. Departmental approval is required before the requested access can be obtained. This approval ensures that the student's objectives of learning meet the criteria for this program. Please allow approximately two weeks to process your request for approval. BREU students will not be allowed access to the Institute's facilities, either physically or electronically, until approval has been granted. Approval for the engagement request, including facilities and network access, may be denied if a conflict arises with Export Control regulations and/or an external activity in which the faculty mentor may be engaged and an accommodation cannot resolve the conflict.

To complete this form:

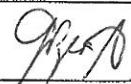
1. Provide all requested information and attach the BREU student's current curriculum vita (if new engagement) and departmental approval form if engagement is for credits. The CV (for initial engagements) and approval form are required for submission along with this request form.
2. The student and faculty mentor must sign the request form.
3. The completed form must be received by the Institute's HR group through the BREU program coordinator no later than the university's established 'Last Day to Add Classes' deadline for the given semester. Students must work with his/her academic department to add the appropriate research or course credit course.

Notes:

1. Applications received by the Institute's HR group after the 'Last Day to Add Classes' deadline for the given semester will be prepared for the upcoming semester.
2. All building and network access will be terminated effective at 5:00pm on the day that the student's BREU appointment ends unless an extension is processed and approved prior to the end date as stated below.

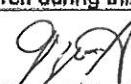
New Engagement  
 Renewal Engagement

Course Credit  
 Internship

|                               |   |                                   |               |
|-------------------------------|---|-----------------------------------|---------------|
| Name of Mentee (Student):     | Kyle Morgan   | Name of Faculty Sponsor:          | Gizem Korkmaz |
| Signature of Faculty Sponsor: |  | Date:                             | 05/01/17      |
| Institute Division:           | Social and Decision Analytics Laboratory  | Research or Administrative Group: | Sallie Keller |

# BIOCOMPLEXITY INSTITUTE

## Biocomplexity Research Experience for Undergraduates Request Form Academic Year 2016 – 2017

|   |  |   |                            |           |
|---|--|---|----------------------------|-----------|
| Degree Program:   | Mathematics  |   | Estimated Graduation Date: | 2018      |
| Engagement Term:  | <p><b>Please select the period for this engagement agreement.</b><br/> <i>Please select only ONE semester period.</i></p> <input type="checkbox"/> Fall Semester (August 10 – December 24)<br><input type="checkbox"/> Spring Semester (December 25 – May 9)<br><input checked="" type="checkbox"/> Summer I and II Semester (May 10 – August 9)   |   |                            |           |
| Requested BREU Start Date:  | May 22, 2017   |   |                            |           |
| Learning Objectives of Activities:  | <p><b>Please insert a detailed description of study to include the objectives, materials and methods, and justification.</b></p> <p>The primary focus will be at the interface of data analytics and understanding (modeling) the social condition – integrated human habitat, health, and well-being. Students will be part of interdisciplinary research teams that horizontally integrate statistics, social and behavioral sciences, engineering, and life sciences. The research teams are also vertically integrated including undergraduates, graduate students, post-docs, and research faculty. The students will undertake interdisciplinary research to examine and study science and technology policy issues, to conduct research as an integral team member, to interact with sponsors and policy decision-makers. Students will conduct research for 40 hours per week, on average.</p> <p>Students will engage in large-scale data analytics theory and methods research projects. The project teams will teach students to conduct comprehensive literature reviews, including use of tools to support the development of the review. Students will be taught how team science is conducted and the roles and responsibilities of the team members, including research integrity and ethics. Students will participate in the framing of research questions and the development of research plans. Students will learn to use software tools such as Hadoop, R, Python, SAS, and GIS to develop the analytical methods. Students will be trained in communication skills, including how to present and write research results. The projects are designed to cover the scientific to political landscape and students are taught that to inform policy requires an understanding of the policy issues and questions and the ability to provide independent and objective results based on scientific research.</p> |   |                            |           |
| End-of-course Review:   | <p><b>Please insert the method of evaluation against the established 'Learning Objectives'.</b></p> <p>Students will be expected to attend workshops provided by SDAL research faculty and staff. Students will be expected to present their research to present their research plan early in the project, provide a mid-project review, develop a project poster to present a summary of their research findings at the end of their term, and co-author on research publications derived from their work. There will also be a midterm presentation to evaluate project progress. Finally, the students will be asked to write a report that summarizes the conducted research during this experience.</p>   |   |                            |           |
| Student and Mentor Agreement of the Objectives of Learning and Review Timeline: | Mentor Signature:  |  | Date:                      | 05/01/17  |
|   | Mentee Signature:  |  | Date:                      | 4-30-2017 |
|   | BREU Coordinator Signature:  |   | Date:                      |           |

# BIOCOMPLEXITY INSTITUTE

## Biocomplexity Research Experience for Undergraduates Request Form Academic Year 2016 – 2017

|   |  |
|---|--|
| <b>Access Level and Space Request:</b>                        | <p>Access Level Requested (check only one):</p> <p><input checked="" type="checkbox"/> No access card necessary<br/> <input type="checkbox"/> Access card 8-5 only<br/> <input type="checkbox"/> Access card full 24/7 (requires justification and student must be supervised at all times during non-business hours)</p> <p>Space/Equipment Requested (check all that apply):</p> <p><input type="checkbox"/> Lab (suggest lab space number)<br/> <input type="checkbox"/> Office (suggest space as desired)<br/> <input type="checkbox"/> Computer<br/> <input checked="" type="checkbox"/> Access to research unit's network drive(s)<br/> <input type="checkbox"/> Phone</p> |
| <b>Export Control Liability:</b>                              | <p>Will the student be exposed to or work with export control technology?</p> <p><input type="checkbox"/> Yes<br/> <input checked="" type="checkbox"/> No</p> <p>If yes, please describe in detail the name and type of technology?</p>  |
| <b>Conflict of Interest and External Activity Disclosure:</b> | <p>Will the proposed activity or student be engaged either directly or indirectly to an external activity?</p> <p><input type="checkbox"/> Yes<br/> <input checked="" type="checkbox"/> No</p> <p>If "Yes", do you have a current COI disclosure on file?</p> <p><input type="checkbox"/> Yes<br/> <input type="checkbox"/> No</p> <p>What is the name of the external entity?</p>   |

- Attached is the student's current curriculum vita as part of this BREU request.
- Attached is the student's course/research credit departmental approval form as part of this BREU request.

| <b>For Institute HR Departmental Use:</b>                       |  |       |  |
|---|--|-------|--|
| Visual Compliance Check:  |  | Date: |  |
| Type of technology used checked for Export Control restrictions |  | Date: |  |
| Checked VTPD Campus Ban Listing and report was clear.           |  | Date: |  |
| Division Director Approval:                                     |  | Date: |  |
| Institute Senior Management Approval:                           |  | Date: |  |
| Other notes:  |  |       |  |

# BIOCOMPLEXITY INSTITUTE

## Biocomplexity Research Experience for Undergraduates Request Form Academic Year 2016 – 2017

The Biocomplexity Institute's Research Experience for Undergraduates (BREU) prepares students for professional careers in science and technology fields through hands-on training opportunities. The in-depth training seeks to develop students across demographic areas and to foster innovation and collaboration with researchers and professionals. BREU will provide students with the opportunity to engage alongside cutting-edge research groups at the Institute, and thus engage in active learning at a level that classroom learning alone does not provide. By participating in hands-on research experiences, students will have the opportunity to contribute to creative problem solving; be involved in projects that elicit both engagement and intellectual curiosity; encourage innovation; reward success; and to transform both their curiosity and potential into academic achievement.

Prior to the start of the program, BREU students are matched with a faculty mentor at the Institute. This match will allow students to train alongside a team of researchers whose work aligns with their own research and academic interests. As part of their acceptance into BREU, the student and faculty mentor will develop individualized objectives of learning in accordance with the student's academic level, as well as develop a schedule for performance reports and feedback. To participate in the program, students must have their request to earn research or course credit(s) approved by their academic advisor and academic department according to that department's established procedures prior to the university's 'Last Day to Add Classes' deadline for the given semester.

Following a mentorship match, the faculty mentor must complete this request form – in collaboration with the BREU program coordinator. The completed form along with the departmental approval form for students seeking course credit should be submitted to the BREU program coordinator. Departmental approval is required **before** the requested access can be obtained. This approval ensures that the student's objectives of learning meet the criteria for this program. Please allow approximately **two weeks** to process your request for approval. BREU students will not be allowed access to the Institute's facilities, either physically or electronically, until approval has been granted. Approval for the engagement request, including facilities and network access, may be denied if a conflict arises with Export Control regulations and/or an external activity in which the faculty mentor may be engaged and an accommodation cannot resolve the conflict.

To complete this form:

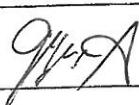
1. Provide all requested information and attach the BREU student's current curriculum vita (if new engagement) and departmental approval form if engagement is for credits. The CV (for initial engagements) and approval form are **required** for submission along with this request form.
2. The student and faculty mentor must sign the request form.
3. The completed form must be received by the Institute's HR group through the BREU program coordinator no later than the university's established 'Last Day to Add Classes' deadline for the given semester. Students must work with his/her academic department to add the appropriate research or course credit course.

Notes:

1. Applications received by the Institute's HR group after the 'Last Day to Add Classes' deadline for the given semester will be prepared for the upcoming semester.
2. All building and network access will be terminated effective at 5:00pm on the day that the student's BREU appointment ends unless an extension is processed and approved prior to the end date as stated below.

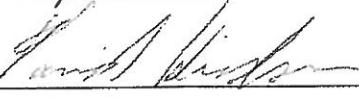
New Engagement  
 Renewal Engagement

Course Credit  
 Internship

|                               |   |                                   |               |
|-------------------------------|---|-----------------------------------|---------------|
| Name of Mentee (Student):     | David Hinkle  | Name of Faculty Sponsor:          | Gizem Korkmaz |
| Signature of Faculty Sponsor: |  | Date:                             | 05/01/17      |
| Institute Division:           | Social and Decision Analytics Laboratory  | Research or Administrative Group: | Sallie Keller |

# BIOCOMPLEXITY INSTITUTE

## Biocomplexity Research Experience for Undergraduates Request Form Academic Year 2016 – 2017

|   |  |   |                            |                |
|---|--|---|----------------------------|----------------|
| Degree Program:   | Business Information Technology, Decision Support Systems,   |   | Estimated Graduation Date: | 2019           |
| Engagement Term:  | <b>Please select the period for this engagement agreement.</b><br><i>Please select only ONE semester period.</i> <p><input type="checkbox"/> Fall Semester (August 10 – December 24)<br/> <input type="checkbox"/> Spring Semester (December 25 – May 9)<br/> <input checked="" type="checkbox"/> Summer I and II Semester (May 10 – August 9)</p>   |   |                            |                |
| Requested BREU Start Date:  | May 22, 2017   |   |                            |                |
| Learning Objectives of Activities:  | <b>Please insert a detailed description of study to include the objectives, materials and methods, and justification.</b><br><p>The primary focus will be at the interface of data analytics and understanding (modeling) the social condition – integrated human habitat, health, and well-being. Students will be part of interdisciplinary research teams that horizontally integrate statistics, social and behavioral sciences, engineering, and life sciences. The research teams are also vertically integrated including undergraduates, graduate students, post-docs, and research faculty. The students will undertake interdisciplinary research to examine and study science and technology policy issues, to conduct research as an integral team member, to interact with sponsors and policy decision-makers. Students will conduct research for 40 hours per week, on average.</p> <p>Students will engage in large-scale data analytics theory and methods research projects. The project teams will teach students to conduct comprehensive literature reviews, including use of tools to support the development of the review. Students will be taught how team science is conducted and the roles and responsibilities of the team members, including research integrity and ethics. Students will participate in the framing of research questions and the development of research plans. Students will learn to use software tools such as Hadoop, R, Python, SAS, and GIS to develop the analytical methods. Students will be trained in communication skills, including how to present and write research results. The projects are designed to cover the scientific to political landscape and students are taught that to inform policy requires an understanding of the policy issues and questions and the ability to provide independent and objective results based on scientific research.</p> |   |                            |                |
| End-of-course Review:   | <b>Please insert the method of evaluation against the established ‘Learning Objectives’.</b><br><p>Students will be expected to attend workshops provided by SDAL research faculty and staff. Students will be expected to present their research to present their research plan early in the project, provide a mid-project reviews, develop a project poster to present a summary of their research findings at the end of their term, and co-author on research publications derived from their work. There will also be a midterm presentation to evaluate project progress. Finally, the students will be asked to write a report that summarizes the conducted research during this experience.</p>  |   |                            |                |
| Student and Mentor Agreement of the Objectives of Learning and Review Timeline: | Mentor Signature:  |  |                            | Date: 05/01/17 |
|   | Mentee Signature:  |  |                            | Date: 4/28/17  |
|   | BREU Coordinator Signature:  |   |                            | Date:          |

# BIOCOMPLEXITY INSTITUTE

## Biocomplexity Research Experience for Undergraduates Request Form Academic Year 2016 – 2017

|  |  |
|--|--|
| Access Level and Space Request:                        | <p>Access Level Requested (check only one):</p> <p><input checked="" type="checkbox"/> No access card necessary<br/> <input type="checkbox"/> Access card 8-5 only<br/> <input type="checkbox"/> Access card full 24/7 (requires justification and student must be supervised at all times during non-business hours)</p> <p>Space/Equipment Requested (check all that apply):</p> <p><input type="checkbox"/> Lab (suggest lab space number)<br/> <input type="checkbox"/> Office (suggest space as desired)<br/> <input type="checkbox"/> Computer<br/> <input checked="" type="checkbox"/> Access to research unit's network drive(s)<br/> <input type="checkbox"/> Phone</p> |
| Export Control Liability:                              | <p>Will the student be exposed to or work with export control technology?</p> <p><input type="checkbox"/> Yes<br/> <input checked="" type="checkbox"/> No</p> <p><u>If yes, please describe in detail the name and type of technology?</u></p>   |
| Conflict of Interest and External Activity Disclosure: | <p>Will the proposed activity or student be engaged either directly or indirectly to an external activity?</p> <p><input type="checkbox"/> Yes<br/> <input checked="" type="checkbox"/> No</p> <p>If "Yes", do you have a current COI disclosure on file?</p> <p><input type="checkbox"/> Yes<br/> <input type="checkbox"/> No</p> <p>What is the name of the external entity?</p>   |

- Attached is the student's current curriculum vita as part of this BREU request.
- Attached is the student's course/research credit departmental approval form as part of this BREU request.

| <b>For Institute HR Departmental Use:</b>                        |  |       |  |
|--|--|-------|--|
| Visual Compliance Check:   |  | Date: |  |
| Type of technology used checked for Export Control restrictions. |  | Date: |  |
| Checked VTPD Campus Ban Listing and report was clear.            |  | Date: |  |
| Division Director Approval                                       |  | Date: |  |
| Institute Senior Management Approval                             |  | Date: |  |
| Other notes:   |  |       |  |

## Biocomplexity Research Experience for Undergraduates Request Form Academic Year 2016 – 2017

The Biocomplexity Institute's Research Experience for Undergraduates (BREU) prepares students for professional careers in science and technology fields through hands-on training opportunities. The in-depth training seeks to develop students across demographic areas and to foster innovation and collaboration with researchers and professionals. BREU will provide students with the opportunity to engage alongside cutting-edge research groups at the Institute, and thus engage in active learning at a level that classroom learning alone does not provide. By participating in hands-on research experiences, students will have the opportunity to contribute to creative problem solving; be involved in projects that elicit both engagement and intellectual curiosity; encourage innovation; reward success; and to transform both their curiosity and potential into academic achievement.

Prior to the start of the program, BREU students are matched with a faculty mentor at the Institute. This match will allow students to train alongside a team of researchers whose work aligns with their own research and academic interests. As part of their acceptance into BREU, the student and faculty mentor will develop individualized objectives of learning in accordance with the student's academic level, as well as develop a schedule for performance reports and feedback. To participate in the program, students must have their request to earn research or course credit(s) approved by their academic advisor and academic department according to that department's established procedures prior to the university's 'Last Day to Add Classes' deadline for the given semester.

Following a mentorship match, the faculty mentor must complete this request form – in collaboration with the BREU program coordinator. The completed form along with the departmental approval form for students seeking course credit should be submitted to the BREU program coordinator. Departmental approval is required **before** the requested access can be obtained. This approval ensures that the student's objectives of learning meet the criteria for this program. Please allow approximately **two weeks** to process your request for approval. BREU students will not be allowed access to the Institute's facilities, either physically or electronically, until approval has been granted. Approval for the engagement request, including facilities and network access, may be denied if a conflict arises with Export Control regulations and/or an external activity in which the faculty mentor may be engaged and an accommodation cannot resolve the conflict.

To complete this form:

1. Provide all requested information and attach the BREU student's current curriculum vita (if new engagement) and departmental approval form if engagement is for credits. The CV (for initial engagements) and approval form are **required** for submission along with this request form.
2. The student and faculty mentor must sign the request form.
3. The completed form must be received by the Institute's HR group through the BREU program coordinator no later than the university's established 'Last Day to Add Classes' deadline for the given semester. Students must work with his/her academic department to add the appropriate research or course credit course.

Notes:

1. Applications received by the Institute's HR group after the 'Last Day to Add Classes' deadline for the given semester will be prepared for the upcoming semester.
2. All building and network access will be terminated effective at 5:00pm on the day that the student's BREU appointment ends unless an extension is processed and approved prior to the end date as stated below.

New Engagement  
 Renewal Engagement

Course Credit  
 Internship

|                               |   |                                   |               |
|-------------------------------|---|-----------------------------------|---------------|
| Name of Mentee (Student):     | David Park  | Name of Faculty Sponsor:          | Gizem Korkmaz |
| Signature of Faculty Sponsor: |  | Date:                             | 05/01/17      |
| Institute Division:           | Social and Decision Analytics Laboratory  | Research or Administrative Group: | Sallie Keller |

# BIOCOMPLEXITY INSTITUTE

## Biocomplexity Research Experience for Undergraduates Request Form Academic Year 2016 – 2017

|   |  |   |      |
|---|--|---|------|
| Degree Program:   | Business Information Technology  | Estimated Graduation Date:  | 2019 |
| Engagement Term:  | <b>Please select the period for this engagement agreement.</b><br><i>Please select only ONE semester period.</i> <input type="checkbox"/> Fall Semester (August 10 – December 24)<br><input type="checkbox"/> Spring Semester (December 25 – May 9)<br><input checked="" type="checkbox"/> Summer I and II Semester (May 10 – August 9)  |   |      |
| Requested BREU Start Date:  | May 22, 2017   |   |      |
| Learning Objectives of Activities:  | <b>Please insert a detailed description of study to include the objectives, materials and methods, and justification.</b><br><p>The primary focus will be at the interface of data analytics and understanding (modeling) the social condition – integrated human habitat, health, and well-being. Students will be part of interdisciplinary research teams that horizontally integrate statistics, social and behavioral sciences, engineering, and life sciences. The research teams are also vertically integrated including undergraduates, graduate students, post-docs, and research faculty. The students will undertake interdisciplinary research to examine and study science and technology policy issues, to conduct research as an integral team member, to interact with sponsors and policy decision-makers. Students will conduct research for 40 hours per week, on average.</p> <p>Students will engage in large-scale data analytics theory and methods research projects. The project teams will teach students to conduct comprehensive literature reviews, including use of tools to support the development of the review. Students will be taught how team science is conducted and the roles and responsibilities of the team members, including research integrity and ethics. Students will participate in the framing of research questions and the development of research plans. Students will learn to use software tools such as Hadoop, R, Python, SAS, and GIS to develop the analytical methods. Students will be trained in communication skills, including how to present and write research results. The projects are designed to cover the scientific to political landscape and students are taught that to inform policy requires an understanding of the policy issues and questions and the ability to provide independent and objective results based on scientific research.</p> |   |      |
| End-of-course Review:   | <b>Please insert the method of evaluation against the established ‘Learning Objectives’.</b><br><p>Students will be expected to attend workshops provided by SDAL research faculty and staff. Students will be expected to present their research to present their research plan early in the project, provide a mid-project reviews, develop a project poster to present a summary of their research findings at the end of their term, and co-author on research publications derived from their work. There will also be a midterm presentation to evaluate project progress. Finally, the students will be asked to write a report that summarizes the conducted research during this experience.</p>  |   |      |
| Student and Mentor Agreement of the Objectives of Learning and Review Timeline: | Mentor Signature:  |  |      |
|   | Mentee Signature:  |  |      |
|   | BREU Coordinator Signature:  |   |      |

# BIOCOMPLEXITY INSTITUTE

## Biocomplexity Research Experience for Undergraduates Request Form Academic Year 2016 – 2017

|  |  |
|--|--|
| Access Level and Space Request:                        | <p>Access Level Requested (check only one):</p> <p><input checked="" type="checkbox"/> No access card necessary<br/> <input type="checkbox"/> Access card 8-5 only<br/> <input type="checkbox"/> Access card full 24/7 (requires justification and student must be supervised at all times during non-business hours)</p> <p>Space/Equipment Requested (check all that apply):</p> <p><input type="checkbox"/> Lab (suggest lab space number)<br/> <input type="checkbox"/> Office (suggest space as desired)<br/> <input type="checkbox"/> Computer<br/> <input checked="" type="checkbox"/> Access to research unit's network drive(s)<br/> <input type="checkbox"/> Phone</p> |
| Export Control Liability:                              | <p>Will the student be exposed to or work with export control technology?</p> <p><input type="checkbox"/> Yes<br/> <input checked="" type="checkbox"/> No</p> <p>If yes, please describe in detail the name and type of technology?</p>  |
| Conflict of Interest and External Activity Disclosure: | <p>Will the proposed activity or student be engaged either directly or indirectly to an external activity?</p> <p><input type="checkbox"/> Yes<br/> <input checked="" type="checkbox"/> No</p> <p>If "Yes", do you have a current COI disclosure on file?</p> <p><input type="checkbox"/> Yes<br/> <input type="checkbox"/> No</p> <p>What is the name of the external entity?</p>   |

- Attached is the student's current curriculum vita as part of this BREU request.
- Attached is the student's course/research credit departmental approval form as part of this BREU request.

| <b>For Institute HR Departmental Use:</b>                        |  |       |  |
|--|--|-------|--|
| Visual Compliance Check:   |  | Date: |  |
| Type of technology used checked for Export Control restrictions: |  | Date: |  |
| Checked VTPD Campus Ban Listing and report was clear:            |  | Date: |  |
| Division Director Approval:                                      |  | Date: |  |
| Institute Senior Management Approval:                            |  | Date: |  |
| Other notes:   |  |       |  |

