

# Department of Biological Sciences

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The Department of Biological Sciences provides educational opportunities to undergraduate and graduate students and conducts world class research in a variety of areas in modern biology.

Undergraduate Programs in the Department of Biological Sciences have the primary mission of providing our diverse population of students with the opportunity and support to successfully complete their major and prepare for their post-baccalaureate life as independent thinkers, lifelong learners, and contributing members of society.

Undergraduates begin with comprehensive studies of the structure, function, behavior, and evolution of cells, organisms, populations, and ecosystems and then have the opportunity to select upper division courses that reflect their intellectual interests and career goals. Those who earn a Bachelor of Science degree in Biological Sciences, Genetics, Microbiology or Zoology gain a strong background in biology and in related fields. Those who earn a Bachelor of Arts degree in Biology establish a solid foundation in the life sciences and also design a secondary area of focus to complement their studies in the life sciences. All students complete the NC State general education program. Some students complete one of the many minors available from departments all across campus.

All incoming first-year students interested in majoring in any one of these degree programs will start their studies in the NC State Life Sciences First Year Program (<https://departments.sciences.ncsu.edu/lfsfy/>), and will explore these and related degree options during their first year while they take courses relevant to all life science degree programs at NC State.

The Department of Biological Sciences also offers minors in Biological Sciences, Toxicology, Evolutionary Biology, Forensic Science, Genetics, Global Health, Microbiology, Paleontology, and Zoology, as well as two online certificate programs: the Undergraduate Certificate in Microbiology and the Graduate Certificate in Biology for Educators.

To learn more about the Department of Biological Sciences, visit our website (<https://bio.sciences.ncsu.edu/>).

## Contact

### Department of Biological Sciences

Student Services and Advising Offices  
2727 Bostian Hall  
Campus Box 7611  
Raleigh, NC 27685  
919.515.334  
BioSciHelp@ncsu.edu (bioscihelp@ncsu.edu)

### Dr. Carolyn Mattingly

Department Head  
919.515.1509  
cjmattin@ncsu.edu

## Faculty

### Departmental Administration

C. J. Mattingly, Department Head

J. L. Lubischer, Associate Department Head

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## Undergraduate Program Directors and Coordinators

Directors of Undergraduate Degree Programs, *L. D. Parks (Bio Sci)*, *J. Little (BA in Biology)*, *B. Gardner (Genetics)*, *J. W. Olson (Microbiology)*, *J. L. Campbell (Zoology)*

Coordinators within the B.S. in Biological Sciences, *M. L. Sikes (Molecular, Cellular, and Developmental Biology)*, *J. E. Meitzen (Integrative Physiology and Neurobiology)*, *L. D. Parks (Human Biology)*, *R. B. Langerhans (Ecology, Evolution, and Conservation Biology)*

Departmental Honors Program Committee, *L. D. Parks*, *B. Gardner*, *J. W. Olson*, *J. L. Campbell*, *R.B. Langerhans*, *G. A. LeBlanc*

Coordinators of Minors, *L. D. Parks (Bio Sci)*, *E. Thompson (Environmental Toxicology)*, *R. B. Langerhans (Evolutionary Biology)*, *A. H. Ross (Forensic Science)*, *J. P. Casani (Global Health)*, *B. Gardner (Genetics)*, *J. W. Olson (Microbiology)*, *T. Gates (Paleontology)*, *J. L. Campbell (Zoology)*

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## Graduate Program Directors

S. W. Kullman, *Environmental and Molecular Toxicology*

R. B. Roberts, *Genetics*

J. R. Godwin, *Biology*

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## Online Certificate Coordinators

M. V. Ramirez, *Undergraduate Certificate in Microbiology (not for NC State students)*

E. E. A. Thompson, *Graduate Certificate in Biology for Educators*

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## Named Professors

W. R. Atchley (Emeritus)

E. Hodgson (Emeritus)

C. S. Levings III (Emeritus)

H. B. Patisaul

J. G. Scandalios (Emeritus)

R. C. Smart

F. A. Wright

Z.-B. Zeng

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## University Faculty Scholars

M. S. Bereman (in memoriam)

J. A. Hoppin  
C. Hoyo  
C. J. Mattingly  
J. E. Meitzen  
H. B. Patisaul  
R. B. Roberts  
A. H. Ross

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## Alumni Distinguished Undergraduate Professors

J. W. Brown  
J. L. Campbell  
M. G. Ferzli  
W. C. Grant (Emeritus)  
W. H. Mackenzie (Emeritus)  
L. D. Parks  
J. F. Roberts (Emeritus)

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## Professors

W. R. Atchley (Emeritus)  
B. L. Black  
J. C. Bonner  
R. J. Borski  
P. C. Bradbury (Emeritus)  
P. T. Bromley (Emeritus)  
J. W. Brown (Emeritus)  
D. B. Buchwalter  
D. J. Burke  
S. E. Curtis (Emeritus)  
J. R. Godwin  
W. C. Grant (Emeritus)  
W. D. Hanson (Emeritus)  
A. Hartstone-Rose  
H. F. Heatwole (Emeritus)  
E. Hodgson (Emeritus)  
J. A. Hoppin

C. Hoyo  
W. E. Kloos (Emeritus)  
S. W. Kullman  
S. M. Laster  
G. A. LeBlanc  
R. B. Leidy (Emeritus)  
C. S. Levings III (Emeritus)  
J. W. Mahaffey  
J.W. Mahaffey  
V. J. Martin  
C. J. Mattingly  
D. F. Matzinger (Emeritus)  
W. H. McKenzie (Emeritus)  
J. Ninomiya-Tsuji  
H. B. Patisaul  
I. T. Petty  
D.M. Reif  
E. F. Rissman  
J. F. Roberts (Emeritus)  
A.H. Ross  
J. G. Scandalios (Emeritus)  
H. E. Schaffer (Emeritus)  
M. H. Schweitzer  
D. Shea  
T. J. Sheets (Emeritus)  
R. C. Smart  
D. E. Smith (Emeritus)  
S. L. Spiker (Emeritus)  
C. W. Stuber (Emeritus)  
J. L. Thorne  
A. C. Triantaphyllou (Emeritus)  
Y. Tsuji  
J. Tsuji  
J. G. Vandenberg (Emeritus)  
F. A. Wright  
Z-B. Zeng

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## Teaching Professors

J.L. Campbell  
 M.G. Ferzli  
 M. B. Gardner  
 L. D. Parks

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## Research Professors

S. M. Belcher  
 D. Shea  
 R. L. Jirtle

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## Associate Professor

D. L. Aylor  
 S.M. Belcher  
 G. C. Conant  
 M.A. Cowley  
 P.A. Estes  
 S. Gaddameedhi  
 A. Hartstone-Rose  
 R. B. Langerhans  
 J. E. Meitzen  
 M. Niedzlek-Feaver  
 D. M. Nielsen  
 J. W. Olson  
 A. J. Planchart  
 D. M. Reif  
 R. B. Roberts  
 F. Scholle  
 M. L. Sikes  
 D.A. Skaar  
 Y. Zhou  
 C. S. Heil  
 M. Cowley  
 R. F Guerrero

J. R. Hall  
 K. C. Marsden  
 C. Zakas  
 R. R. H. Anholt  
 T. Augspurger  
 A. E. Bogan  
 R. E. Cannon  
 J. P. Casani  
 C.J Cavazos  
 J. C. DeWitt  
 S. Fenton  
 M.B. Hawkins  
 A. B. Heckert  
 J. J. Heindel  
 J.E. Horvath Roth  
 V. J. Johnson  
 C.F. Kammerer  
 C. Kwiatkowski  
 R. Langley  
 E.C. Lynch  
 T. F. Mackay  
 J. Maillard  
 W. O. McMillan  
 J. A. Pierson  
 M.E. Serr  
 N. D. Singh  
 E. A. Stone  
 B. L. Stuart  
 D. W. Threadgill  
 D.C. Zeldin  
 R. R. H. Anholt  
 B.L Stuart  
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E.A. Stone

B.L. Stuart

D. W. Threadgill

D. L. Aylor

G. C. Conant

D. L. Aylor

S.M. Belcher

G.C. Conart

M.A. Cowley

D.L. Aylor

G.C. Conart

R. R. H. Anholt

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B. L. Stuart

D. W. Threadgill

R.F Guerrero Farias

J.R.Hall

K. Marsden

C.S. Smukowski Heli

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A.B.Heckert

C.F. Kammerer

C.F.Kwiatkowski

V.J. Johnson

R.L. Langley

E.C. Lynch

T.F. MacKay

W.O. McMillian III

JM Mailard

M.E.Serr

B.L. Stuart

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R. R. Anholt

T. P. Augspurger

A. E. Bogan

R. E. Cannon

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J. C. Dewitt

R. F Guerrero Farias

S. E. Fenton

J. R. Hall

M. B. Hawkins

A. B. Heckert

C. S. Smukowski Heli

W. O. McMillian III

V. J. Johnson

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T. F. MacKay

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V. J. Johnson

C. F. Kammerer

C. F. Kwiatkowski

R. L. Langley

E. C. Lynch

T. F. MacKay

JM Maillard

J. E. Horvath Roth

M. E. Serr

B. L. Stuart

D. C. Zeldin

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## Associate Teaching Professors

M. D. Engell

J. F. Flores

C.C. Goller

C.J. Halweg

W.M. Jones

M.J. Klesath

J. M. Landin

A. M. Lee

J. L. Lubischer

M.V. Ramirez

M.E. Tavrne

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## Associate Research Professors

Z. Drobna

P. A. Estes

L. E. Zanno

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## Assistant Teaching Professors

J. L. Little

S. L. Chen

T. A. Gates

C. C. Goller

C. L. Gordy

C. J. Halweg

B. V. Jacquet

W. M. Jones

M. J. Klesath

A.M. Lee

M. U. Ramirez

M. E. Taveirne

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## Assistant Research Professors

M. A. Carbone

J.R. Enders

J. R. Hall

M. B. Reiskind

E.A.E. Schroeter

D. A. Skaar

A. A. Smith

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## Lecturers

G. Barrick

W. M. Johnstone, III

A.A. Krentzel

R.J. Ohr

L. M. Paciulli

E. E. A. Thompson

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## Adjunct Faculty

R. R. Anholt

T. P. Augspurger

A. E. Bogan

R. E. Cannon

C. J. Cavazos

J. C. DeWitt

S. E. Fenton

M. B. Hawkins

A. B. Heckert

W. O. McMillian III

V. J. Johnson

C. F. Kammerer

C. F. Kwiatkowski

R. L. Langley

E. C. Lynch

T. F. MacKay

JM Maillard

J. E. Horvath Roth

M. E. Serr

B. L. Stuart

D. C. Zeldin

## Plans

- Biological Sciences (BA) (<http://catalog.ncsu.edu/undergraduate/sciences/biological-sciences/biological-sciences-ba/>)
- Biological Sciences (BS) (<http://catalog.ncsu.edu/undergraduate/sciences/biological-sciences/biological-sciences-bs/>)
- Biological Sciences (BS): Ecology, Evolution and Conservation Biology Concentration (<http://catalog.ncsu.edu/undergraduate/sciences/biological-sciences/biological-sciences-bs-ecology-evolution-conservation-biology-concentration/>)
- Biological Sciences (BS): Human Biology Concentration (<http://catalog.ncsu.edu/undergraduate/sciences/biological-sciences/biological-sciences-bs-human-biology-concentration/>)
- Biological Sciences (BS): Integrative Physiology and Neurobiology Concentration (<http://catalog.ncsu.edu/undergraduate/sciences/biological-sciences/biological-sciences-bs-integrative-physiology-neurobiology-concentration/>)
- Biological Sciences (BS): Molecular, Cellular, and Developmental Biology Concentration (<http://catalog.ncsu.edu/undergraduate/sciences/biological-sciences/biological-sciences-bs-molecular-cellular-developmental-biology-concentration/>)
- Biological Sciences (Minor) (<http://catalog.ncsu.edu/undergraduate/sciences/biological-sciences/biological-sciences-minor/>)
- Biological Sciences (Honors) (<http://catalog.ncsu.edu/undergraduate/sciences/biological-sciences/honorsbiology/>)
- Environmental Toxicology (Minor) (<http://catalog.ncsu.edu/undergraduate/sciences/biological-sciences/environmental-toxicology/>)
- Evolutionary Biology (Minor) (<http://catalog.ncsu.edu/undergraduate/sciences/biological-sciences/evolutionary-biology-minor/>)
- Forensic Science (Minor) (<http://catalog.ncsu.edu/undergraduate/sciences/biological-sciences/forensic-science-minor/>)
- Genetics (BS) (<http://catalog.ncsu.edu/undergraduate/sciences/biological-sciences/genetics-bs/>)
- Genetics (Minor) (<http://catalog.ncsu.edu/undergraduate/sciences/biological-sciences/genetics-minor/>)
- Global Health (Minor) (<http://catalog.ncsu.edu/undergraduate/sciences/biological-sciences/global-health-minor/>)
- Microbiology (BS) (<http://catalog.ncsu.edu/undergraduate/sciences/biological-sciences/microbiology-bs/>)
- Microbiology (BS): Microbial Biotechnology Concentration (<http://catalog.ncsu.edu/undergraduate/sciences/biological-sciences/microbiology-bs-microbial-biotechnology/>)
- Microbiology (BS): Microbial Health Science Concentration (<http://catalog.ncsu.edu/undergraduate/sciences/biological-sciences/microbiology-bs-microbial-health-science/>)

- Microbiology (BS): Microbial Research Concentration (<http://catalog.ncsu.edu/undergraduate/sciences/biological-sciences/microbiology-bs-microbial-research/>)
- Microbiology (Certificate) (<http://catalog.ncsu.edu/undergraduate/sciences/biological-sciences/microbiology-certificate/>)
- Microbiology (Minor) (<http://catalog.ncsu.edu/undergraduate/sciences/biological-sciences/microbiology-minor/>)
- Paleontology (Minor) (<http://catalog.ncsu.edu/undergraduate/sciences/biological-sciences/paleontology-minor/>)
- Zoology (BS) (<http://catalog.ncsu.edu/undergraduate/sciences/biological-sciences/zoology-bs/>)
- Zoology (Minor) (<http://catalog.ncsu.edu/undergraduate/sciences/biological-sciences/zoology-minor/>)

## Undergraduate Honors Program in Biological Sciences

The Department of Biological Sciences (DBS) Honors Program requires students to design a challenging program of advanced study, including 8 credits of honors coursework in biology and at least two semesters of research or teaching scholarship. Participants are required to present their scholarly work at a local, regional, or national meeting. A written honors thesis is also required. Invitations to join the DBS Honors Program are sent in the first 3 weeks of the Fall and Spring semesters, based on GPA and number of credit hours completed at NC State, as described in the Admissions Requirements.

### Program Requirements

BSC 497 Biological Sciences Honors Project Part 1 and BSC 498 Biological Sciences Honors Project Part 2

- two semesters of mentored research or teaching scholarship in biology
- includes written project proposal (BSC 497 Biological Sciences Honors Project Part 1), and a draft of the honors thesis (BSC 498 Biological Sciences Honors Project Part 2)
- includes completion of reflection prompts posted on Moodle
- enrollment requires a completed contract with the mentor, approved by the DBS Honors Program Committee

BSC 499 Honors Thesis in Biological Sciences

- requires oral presentation of work completed in BSC 497 Biological Sciences Honors Project Part 1 & BSC 498 Biological Sciences Honors Project Part 2
- requires final written honors thesis on the work completed in BSC 497 Biological Sciences Honors Project Part 1 & BSC 498 Biological Sciences Honors Project Part 2
- the honors thesis will be submitted mid-way through the semester for evaluation and to allow time for revisions
- the honors thesis must be approved by the mentor and by the DBS Honors Program Committee

Honors Coursework (8 cr)

- courses must be completed with a B- or higher
- courses must be numbered 300 or higher
- courses must focus on a topic in biology
- eligible courses include: (1) any course designated as an honors course by the DBS Honors Program Committee, (2) any course for

which an honors contract is approved by the DBS Honors Program Committee, and (3) any Study Abroad course approved by the DBS Honors Program Committee.

### Admissions Requirement

Students in any major offered by the Department of Biological Sciences who have earned an overall GPA of 3.60 after completing 30 (but fewer than 65) credit hours at NC State will receive an invitation to join the DBS Honors Program.

Transfer Students in any major offered by the Department of Biological Sciences who have earned an overall GPA of 3.60 after completing 15 credit hours at NC State (and a total of 30 credit hours of college coursework), will receive an invitation to join the DBS Honors Program.

### Graduation Requirements

complete the Program Requirements described above  
maintain an overall GPA of 3.40 or higher  
complete the graduation requirements for an undergraduate degree program offered by the Department of Biological Sciences

### Program Director

Please contact [bioscihelp@ncsu.edu](mailto:bioscihelp@ncsu.edu)

College of Sciences Honors Contract: (<http://oucc.dasa.ncsu.edu/wp-content/uploads/sites/16/2015/08/BIO498-499form.pdf>) BIO 498 Honors Project Part 1/BIO 499 Honors Project Part 2 Memorandum of Agreement

## Undergraduate Honors Program In Genetics

The Honors Program in Genetics encourages qualified students to design a program of advanced study, including at least 2 semesters of research or teaching experience, to challenge themselves as scholars. Honors participants are required to present their scholarly work at a local, regional, or national symposium or conference. Students majoring in Genetics can qualify for the Honors Program in Genetics by completing 30 credit hours at NC State with an overall GPA of 3.50 or better. Transfer students majoring in Genetics can qualify by completing their first semester at NC State with a GPA of 3.50 or better.

### Program Requirements

Two semesters (6 cr) of mentored research or teaching experience in their discipline includes written project proposal, a paper, and a poster presentation describing your work requires a completed contract with the mentor, approved by the Program Director in advance of the experience

Eight (8) credit hours of honors coursework:

- must be completed with a C or better
- must be numbered 300 or higher
- can include ALS 398 Agriculture and Life Sciences Honors Seminar for those who completed it no later than Spring 2013

Honors coursework is defined as including any course designated as an honors course by the University Honors Program, any course for which an Honors Contract is approved by the University Honors Program, any course at the 500 level, and any approved study Abroad course.

## Admissions Requirements

Genetics majors who have earned an overall GPA of 3.50 after completing 30 credit hours at NC State (or transfer students who earn a GPA of 3.50 after completing 15 credit hours at NC State), will receive an invitation to join the Honors Program in Genetics.

## Graduation Requirements

Students must complete the Program Requirements as described above and must maintain an overall GPA of 3.35 or higher throughout their remaining undergraduate career, and must graduate In Genetics.

## Program Director

Dr. Betty Gardner  
Thomas Hall 2532, Box 7614  
919.515.5776

College of Sciences Honors Contract: (<http://oucc.dasa.ncsu.edu/wp-content/uploads/sites/16/2015/08/BIO498-499form.pdf>) BIO 498 Honors Project Part 1/BIO 499 Honors Project Part 2 Memorandum of Agreement

## Undergraduate Honors Program In Microbiology

The Honors Program in Microbiology encourages qualified students to design a program of advanced study, including at least 2 semesters of research or teaching experience, to challenge themselves as scholars. Students majoring in Microbiology can qualify for the Honors Program in Microbiology by completing 30 credit hours at NC State with an overall GPA of 3.50 or better. Transfer students majoring In Microbiology can qualify by completing 15 credit hours at NC State with a GPA of 3.50 or better.

## Program Requirements

Two semesters (6 cr) of mentored research or teaching experience in their discipline

- includes a written project proposal, a paper, and a poster presentation describing your work
- requires a completed contract with the mentor, approved by the Program Director in advance of the experience

Eight (8) credit hours of honors coursework

- must be completed with a C or better
- must be numbered 300 or higher
- can include ALS 398 Agriculture and Life Sciences Honors Seminar for those who completed it no later than Spring 2013

Honors coursework is defined as including any course designated as an honors course by the University Honors Program, any course for which an Honors Contract is approved by the University Honors Program, any course at the 500 level, an approved Study Abroad course.

## Admissions Requirements

Microbiology majors who have earned an overall GPA of 3.50 after completing 30 credit hours at NC State (or transfer students who earn a GPA of 3.50 after completing 15 credit hours at NC State), will receive an invitation to join the Honors Program In Microbiology.

## Graduation Requirements

Students must complete the Program Requirements as described above and must maintain an overall GPA of 3.35 or higher throughout their remaining undergraduate career and must graduate in Microbiology.

## Program Director

Dr. Jonathan Olson  
4544B Thomas Hall  
919.515.7860

College of Sciences Honors Contract: (<http://oucc.dasa.ncsu.edu/wp-content/uploads/sites/16/2015/08/BIO498-499form.pdf>) BIO 498 Honors Project Part 1/BIO 499 Honors Project Part 2 Memorandum of Agreement

## Undergraduate Honors Program In Zoology

The Honors Program in Zoology encourages qualified students to design a program of advanced study, including at least 2 semesters of research or teaching experience, to challenge themselves as scholars. Honors participants are required to present their scholarly work at a local, regional, or national symposium or conference. Students majoring in Zoology can qualify for the Honors Program in Zoology by completing 30 credit hours at NC State with an overall GPA of 3.50 or better. Transfer students majoring in Zoology can qualify by completing their first semester at NC State with a GPA of 3.50 or better.

## Program Requirements

Two semesters (6 cr) of mentored research or teaching experience in their discipline

- includes a written project proposal, a paper, and a poster presentation describing your work
- requires a completed contract with the mentor, approved by the Program Director in advance of the experience

Eight (8) credit hours of honors coursework

- must be completed with a C or better
- must be numbered 300 or higher
- can include ALS 398 Agriculture and Life Sciences Honors Seminar for those who completed it no later than Spring 2013

Honors coursework is defined as including any course designated as an honors course by the University Honors Program, any course for which an Honors Contract is approved by the University Honors Program, any course at the 500 level, and any approved Study Abroad course.

## Admissions Requirements

Zoology majors who have earned an overall GPA of 3.50 after completing 30 credit hours at NC State (or transfer students who earn a GPA of 3.50 after completing 15 credit hours at NC State), will receive an invitation to join the Honors Program in Zoology.

## Graduation Requirements

Students must complete the Program Requirements as described above, must maintain an overall GPA of 3.35 or higher throughout their remaining undergraduate career, and must graduate in Zoology.



## **Program Director**

Dr. Jennifer Campbell  
David Clark Labs 120, Box 7617  
919.513.7570

College of Sciences Honors Contract: (<http://oucc.dasa.ncsu.edu/wp-content/uploads/sites/16/2015/08/BIO498-499form.pdf>) BIO 498 Honors Project Part 1/BIO 499 Honors Project Part 2 Memorandum of Agreement