IMPORTANT: This syllabus form should be submitted to OAA (gsbs_academic_affairs@uth.tmc.edu) a week before the start of each semester.

NOTE to STUDENTS: If you need any accommodations related to attending/enrolling in this course, please contact one of the Graduate School's 504 Coordinators, Cheryl Spitzenberger or Natalie Sirisaengtaksin. We ask that you notify GSBS in advance (preferably at least 3 days before the start of the semester) so we can make appropriate arrangements.

Term and Year: Spring 2022

Course Number and Course Title:
GS04 1235 Basic & Translational Cancer Biology

Credit Hours: 5

Meeting Location: Large Classroom

Building/Room#: BSRB S3.8371

WebEx/Zoom Link:

Program Required Course: ☑ Yes ☐ No

Approval Code: ☐ Yes ☑ No

(If yes, the Course Director or the Course Designee will provide the approval code.)

Audit Permitted: ☐ Yes ☐ No

Classes Begin: January 10, 2022

Classes End: April 29, 2022

Final Exam Week: May 2 - 6, 2022

Class Meeting Schedule

Day	Time
Monday - Lectures	5:00 - 7:00 pm
Friday - Review	11:00 am - 12:00 pm

Course Director

Name and Degree: Jian Hu, PhD

Title: Associate Professor

Department: Cancer Biology

Institution: ☐ *UTH* ☑ *MDACC*

Email Address: jhu3@mdanderson.org

Contact Number: 713-794-5238

Course Co-Director/s: (if any)

Name and Degree: Haoqiang Ying, PhD

Title: Associate Professor

Department: Molecular & Cellular Biology

Institution: ☐ *UTH* ☑ *MDACC*

Email Address: hying@mdanderson.org

Contact Number: 713-563-3367

NOTE: Office hours are available by request. Please email me to arrange a time to meet.

Instructor/s (Use additional page as needed)

1. Name and Degree
   Institution:
   Email Address :
2. Name and Degree
   Institution:
   Email Address :
3. Name and Degree
   Institution:
   Email Address
4. Name and Degree
   Institution:

Email Address:

Teaching Assistant: (if any)	**Cont. Instructor/s**
Name and Email Address Jing Qian, JQian4@mdanderson.org Name and Email Address	5. Name and Degree Institution: Email Address

Course description: The Cancer Biology Core course will synthesize knowledge of critical aspects in human cancer biology for understanding disease development, multidimensional molecular signatures, diagnostics and therapeutics. This course will draw upon seminal articles on cancer biology concepts, primary research articles and integrate expertise from GSBS faculty to disseminate fundamental knowledge and current progress on basic, translational and clinical cancer research

Textbook/Supplemental Reading Materials (if any)

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Course Objective/s:

Upon successful completion of this course, students will

have a foundational understanding of the molecular and cellular origins of cancer, as well as historical and current perspectives of cancer research.

***Specific Learning Objectives*:**

1. Build knowledge and understanding of cellular and molecular origins of cancer, and foundational drivers and suppressors of tumorigenesis
2. Identify seminal signaling pathways and important molecular players in cancer development and progression
3. Describe tumor progression and important 'hallmarks' of cancer
4. Distill scientific literature into key elements and findings, identify shortcomings and propose future directions.

   Apply the current cancer biology knowledge to propose new hypotheses and experiments to test them.
5. Describe standard of care and applications of basic and translational research

Student responsibilities and expectations:

Students enrolled in this course will be expected to preform following activities each week.
1. Read, process, and review (study) material from 1 or 2 seminal review relating to the week's cancer biology topic
2. Read 2 research articles (e.g. primary research)
3. Write 2 one page literature synopsis for the assigned research articles (see Course Grading for more detail)
4. Prepare for and take course quizzes based on course lectures/ readings.
5. Attend and participate at the journal club review session
6. Participate in and contribute to course discussions during lecture, review sessions
7. Prepare for and take a final examination based on lecture and some reading material

Students are expected to complete all assigned reading material (reviews and research literature) prior to class. While you may work and discuss all course materials and assignments in groups, all writing assignments must be your own. Plagiarism and failure properly cite scientific literature and other sources will not be tolerated and are grounds for dismissal from the course and further GSBS disciplinary action. Cheating or engaging in unethical behavior during examinations (quizzes and final) will be grounds for dismissal from the course without credit and further GSBS disciplinary action.

Grading System: ☑ Letter Grade (A-F) ☐ Pass/Fail	
Student Assessment and Grading Criteria : (May include the following:)	
Homework (68 %)	Description: For each day of lecture, students will be assigned 2 seminal papers to critically read. Students will write a one page synopsis for each paper and 1) describe key findings, 2) identify any scientific/technological advances and/or short comings in the paper, and 3) suggest 1-2 future studies based on the findings in the paper that are supported by further independent research by the student. The students will have one week to complete each synopses. (390 points possible; 15 per synopses)
Quiz (11 %)	Description: Multiple choice, true/false, short answer quizzes will be assessed at the beginning of each Review session and will be based on content from previous lecture material and reading assignments. (65 points possible; 5 per quiz)
Presentation (%)	Description
Midterm Exams (%)	Description
Final Exam (11%)	Description: Will be comprehensive on materials from the whole of the course (i.e. lectures and review articles). Question formats could include multiple choice, true/false, and short answer (65 points possible)
Workshop or Breakout-Session (5%)	Description: All students will have the option of physical or remote attendance for the journal club reviews. Again, 85% is required to pass the course (i.e. missing no more than 2 classes). Students are expected to come prepared to critically discuss and ask questions about one of the scientific articles assigned for their literature synopses (26 points possible; 2 per session)
Participation and/or Attendance (5%)	Description: Students must be physically present for lecture. 85% attendance is require to pass the course (i.e. missing no more than 2 classes). Students are encouraged to ask questions and engage in discussion with classmates and instructors and ask questions during lecture and review sessions. In the case that no oral contributions are made during lecture, written questions or discussion points may be submitted after class and/or brought up during the review session. Participation will be graded on a 0-4 scale and follow defined criteria. (28 points possible, 2 per lecture)

CLASS SCHEDULE

Day/Date	Duration (Hour taught by lecturer)	Lecture Topic	Lecturer/s
Monday Jan 10	2	Course Introduction and Expectations Cancer pathology, hallmarks, carcinogenesis, and genetics	Jian Hu, PhD Kanishka Sircar, MD Jason Huse, MD, PhD
Friday Jan 14	1	Review Session: Lecture 1	Jian Hu, PhD and Haoqiang Ying, PhD
Monday Jan 24	2	Oncogenes and tumor viruses	Guocan Wang, PhD Lawrence Kwong, PhD
Friday Jan 28	1	Review Session: Lecture 2	Jian Hu, PhD and Haoqiang Ying, PhD
Monday Jan 31	2	Tumor suppressor genes	George Calin, MD, PhD Sean Post, PhD
Friday Feb 4	1	Review Session: Lecture 3	Jian Hu, PhD and Haoqiang Ying, PhD
Monday Feb 7	2	Signal transduction programs and cancer metabolism	Haoqiang Ying, PhD Boyi Gan, PhD
Friday Feb 11	1	Review Session: Lecture 4	Jian Hu, PhD and Haoqiang Ying, PhD
Monday Feb 14	2	Regulation of the cell cycle and cell growth	Catherine Denicourt, PhD Walter Hittelman, PhD

Friday Feb 18	1	Review Session: Lecture 5	Jian Hu, PhD and Haoqiang Ying, PhD
Monday Feb 21	2	Genomic instability and DNA repair	Katherina Schlacher, PhD John Tainer, PhD
Friday Feb 25	1	Review Session: Lecture 6	Jian Hu, PhD and Haoqiang Ying, PhD
Monday Feb 28	2	Apoptosis (p53), autophagy, and necrosis	Ferdinandos Skoulidis, MD, PhD Curtis Pickering, PhD
Friday Mar 4	1	Review Session: Lecture 7	Jian Hu, PhD and Haoqiang Ying, PhD
Monday Mar 7	2	Multi-step tumorigenesis	Nicholas Navin, PhD Andrea Viale, MD
Friday Mar 11	1	Review Session: Lecture 8	Jian Hu, PhD and Haoqiang Ying, PhD
Monday Mar 21	2	Cell immortalization and tumorigenesis Multi-step tumorigenesis	Ron DePinho, MD
Friday Mar 25	1	Review Session: Lecture 9	Jian Hu, PhD and Haoqiang Ying, PhD
Monday Mar 28	2	The cancer microenvironment – hypoxia, inflammation, angiogenesis and stromal-cancer interactions	Cullen Taniguchi, MD, PhD Joseph McCarty, PhD
Friday Apr 1	1	Review Session: Lecture 10	Jian Hu, PhD and Haoqiang Ying, PhD
Monday Apr 4	2	Invasion and metastasis	Sendurai Mani, PhD Dihua Yu, MD, PhD, MS
Friday Apr 8	1	Review Session: Lecture 11	Jian Hu, PhD and Haoqiang Ying, PhD
Monday Apr 11	1	Tumor immunology and immunotherapy Tumor immunology and immunotherapy	James Allison, PhD
Friday Apr 15	1	Tumor immunology and immunotherapy Tumor immunology and immunotherapy (Cont.)	Michael Curran, PhD
TBD		Review Session: Lecture 12	Jian Hu, PhD and Haoqiang Ying, PhD
Monday Apr 18	2	Cancer diagnostics – biomarkers	Anirban Maitra, MBBS Ali Azhdarinia, PhD
Friday Apr 22	1	Review Session: Lecture 13	Jian Hu, PhD and Haoqiang Ying, PhD
Monday Apr 25	2	Cancer therapies and predicting response	Robert Bast, BA, MD Timothy A. Yap, MBBS, PhD
Friday Apr 29	1	Review Session: Lecture 14	Jian Hu, PhD and Haoqiang Ying, PhD

NOTE: Provide other class information as needed.