MPHP 101. Introduction to Public Health. 3 Units.
The purpose of this course is to introduce students to the science and art of public health through an understanding of the history and philosophies that represent its foundation. Students will learn about the essentials of public health and applications of those precepts throughout history and in the present. The course will examine public health case histories and controversies from the past and present, in order to better understand solutions for the future. Offered as MPHP 306 and MPHP 406. Prereq: Enrollment limited to MPH students (Plan A or Plan B) and EPBI students or instructor consent.

MPHP 406. History and Philosophy of Public Health. 3 Units.
The purpose of this course is to introduce students to the science and art of public health through an understanding of the history and philosophies that represent its foundation. Students will learn about the essentials of public health and applications of those precepts throughout history and in the present. The course will examine public health case histories and controversies from the past and present, in order to better understand solutions for the future. Offered as MPHP 306 and MPHP 406. Prereq: Enrollment limited to MPH students (Plan A or Plan B) and EPBI students or instructor consent.

MPHP 411. Introduction to Health Behavior. 3 Units.
This course will provide a broad overview of health behavior theories and health behaviors in the context of health promotion, examining a variety of models and frameworks to better understand correlates of health risk and protective behaviors, behavior change, and contextual factors that affect health in both individuals and populations. Emphasis is placed on applying "theory" to a variety of health concerns that have strong behavioral components. The relationship between health behavior and individual, interpersonal, and community/environmental context will be presented. Offered as MPHP 411 and PQHS 411. Prereq: Enrollment limited to Master of Public Health or Epidemiology & Biostatistics students.

MPHP 412. Racism and Public Health. 3 Units.
Racism is a threat to public health. Across the US, an increasing number of communities have declared racism as a public health crisis. This declaration is not based on an isolated incident, rather, it is the acknowledgement that racism is structural and has been embedded within the institutional policies and societal norms that are present in our everyday lives. This course will: Recognize racism in the US as a significant cause of poor health, disease, and persistent dis-ease among Black Americans; Explore the relationship between racism and health through a historic accounting of social, political, economic, and environmental conditions post-slavery through the current events of 2020; and, identify how, research, policy, practice, and advocacy can address anti-Black racism and promote health equity.

MPHP 413. Health Education, Communication, and Advocacy. 3 Units.
Health Promotion is an important tool that empowers individuals to increase control over their health. This course will explore the historical, ethical, and philosophical foundations of health promotion with a focus on education, communication, and advocacy. Students will examine how theory translates to practice, including the use of evidence-based programs and policies among diverse settings and populations. As advocates for health, students will identify and engage in "real world" opportunities for action that promote equity and advance the health of communities.
MPHP 419. Topics in Urban Health in the United States. 3 Units.
The focus of this course is on designing sustainable urban policies and programs for advancing health equity in Greater Cleveland. The course builds on recent declarations of racism as a public health crisis in Cuyahoga County and the City of Cleveland and ongoing work in applying system dynamics to addressing structural racism for advancing regional equity. The course introduces the use of system dynamics for understanding urban health inequities and designing sustainable social policies and programs for advancing health equity. The course will cover model structure and its relationships to prior knowledge and assumptions, measurable quantities, and ultimate use in solving problems. Application areas focus on social issues of equity in health, education, and general wellbeing emphasizing transdisciplinary integration of systems (vertically from cells to society and horizontality across systems). Model verification is discussed, along with the basic theory and practice of system dynamics. Quantitative methods are emphasized including the formulation and testing of mathematical models of feedback systems and the use of numeric data and estimation of parameters. Special attention will be given to understanding the dynamics of social and economic justice, value and ethical issues, as well as issues related to race, ethnicity, culture, gender, sexual orientation, religion, physical or mental disability or illness, age, and national origin. Offered as PQHS 419 and MPHP 419.

MPHP 421. Health Economics and Strategy. 3 Units.
The purpose of this course is to develop the analytical skills necessary for understanding how the U.S. health care sector operates, how it has evolved, the forces at work behind perceived deficiencies (in quality and cost control), and the impact of alternative policy proposals. Special attention is given to recent developments in the healthcare marketplace, and the strategic considerations they create for providers and insurers. These issues are addressed through the lens of microeconomic theory. Under this framework, outcomes result from the interaction of decisions made by participants in the healthcare economy (e.g. patients, providers, insurers, government), with those decisions governed by the preferences, incentives and resource constraints facing each decision-maker. Principles of microeconomics will be reviewed as necessary to ensure consistent understanding of basic concepts. The course is designed to appeal to a broad audience, particularly students interested in healthcare management, public health, medical innovation, health law, and public policymaking. Offered as HSMC 421 and MPHP 421.

MPHP 426. An Introduction to GIS for Health and Social Sciences. 3 Units.
This course is designed to give students a first exposure to understanding how GIS is integral to understanding a wide variety of public health problems. It introduces students to current spatial approaches in health research and provides a set of core skills that will allow students to apply these techniques toward their own interests. Subject matter will include chronic diseases, infectious diseases, and vectored diseases examples. Other topics related to social determinants of health and current events (e.g., violence, overdoses, disaster and homelessness) will also be incorporated. Students will be exposed to different types of data and different applications of these data (for example, hospitals, police departments), enabling them to think "outside the box" about how GIS can be utilized to solve real-world problems. Students will learn classic mapping and hotspot techniques. In addition, they will be introduced to novel ways to collect geospatial field data using online sources (Google Street View), primary data collection (spatial video) and mixed method approaches (spatial video geonarratives), all of which represent the cutting edge of spatial epidemiology. Offered as MPHP 426 and PQHS 426.

MPHP 429. Introduction to Environmental Health. 3 Units.
This survey course will introduce students to the principles of environmental and occupational health from a public health perspective. Presentation of concepts including risk assessment, communication and management as well as discussion of environmental and occupational practices, policies, laws and regulations that promote public and population health is included. Students will develop an understanding of the health effects of individuals and populations, including vulnerable populations, when exposed to air and water pollution, pesticides, organic solvents, dusts and physical and biological hazards, which occur in the community or the workplace. Planetary issues, such as One Health and Climate Change, are explored.

MPHP 431. Statistical Methods I. 3 Units.
This course is the first half of a two-semester sequence focused on modern data analysis, advanced statistical modeling, and programming in R and R Markdown. The course emphasizes placing biological, medical and health research questions into a statistical context, and thinking effectively about practical questions of design and analysis, while minimizing theory. In the first semester, we use tools from the tidyverse and literate programming to produce replicable research on public data. Course projects focus on using modern tools to ingest, tidy, manage, explore (transform, visualize and model) and communicate about data. Foundations of the first semester include exploratory data analysis, estimation strategies for means and proportions, and linear models for prediction and exploration of quantitative outcomes. The course attracts people with varied backgrounds in statistics/data science or coding/programming or biomedical science, and a common interest in using data effectively in scientific research. Instructor permission is required for enrollment. Offered as CRSP 431, MPHP 431, and PQHS 431.

MPHP 432. Statistical Methods II. 3 Units.
This course is the second half of a two-semester sequence focused on modern data analysis, advanced statistical modeling, and programming in R and R Markdown. The course emphasizes placing biological, medical and health research questions into a statistical context, and thinking effectively about practical questions of design and analysis, while minimizing theory. Course projects focus on using modern tools to ingest, tidy, manage, explore (transform, visualize and model) and communicate about data. Foundational topics discussed in the second semester build on the work done in the first, and include data spending, estimating and assessing models built with multiple engines in replicable ways using the tidymodels framework, as well as logistic regression and generalized linear models for counts and multi-categorical data, and introductions to modeling weighted, time-to-event and multi-level data. The prerequisite is Statistical Methods I, but well-prepared students may seek a waiver from the instructor. Offered as CRSP 432, MPHP 432, and PQHS 432. Prereq: MPHP 431.

MPHP 433. Community Interventions and Program Evaluation. 3 Units.
This course prepares students to design, conduct, and assess community-based health interventions and program evaluation. Topics include assessment of need, evaluator/stakeholder relationship, process vs. outcome-based objectives, data collection, assessment of program objective achievement based on process and impact, cost-benefit analyses, and preparing the evaluation report to stakeholders. Recommended preparation: PQHS 490, PQHS 431, or MPHP 405. Offered as PQHS 433 and MPHP 433. Prereq: MPHP 411.
MPHP 439. Public Health Management and Policy. 3 Units.
This course is designed to introduce students to the basics of health policy-making and includes a background on the basic structure and components of the US Health Care System (such as organization, delivery and financing). It will also cover introductory concepts in public health management, including the role of the manager, organizational design and control, and accountability. We will address relevant legal, political and ethical issues using case examples. At the end of the course, students will understand how health policy is developed and implemented in various contexts, and the challenges facing system-wide efforts at reform. This is a required course for the MPH degree. Grades will be based on a series of assignments. Prereq: Enrollment limited to MPH students (Plan A or Plan B) and EPBI Students or instructor consent.

MPHP 441. Climate Change and Health. 3 Units.
This course will teach students from a variety of disciplinary backgrounds about i) the effects of climate change on human health; ii) the social, political, and economic contexts of climate change and health; and iii) potential approaches to address these challenges.

MPHP 450. Clinical Trials and Intervention Studies. 3 Units.
Issues in the design, organization, and operation of randomized, controlled clinical trials and intervention studies. Emphasis on long-term multicenter trials. Topics include legal and ethical issues in the design; application of concepts of controls, masking, and randomization; steps required for quality data collection; monitoring for evidence of adverse or beneficial treatment effects; elements of organizational structure; sample size calculations and data analysis procedures; and common mistakes. Recommended preparation: PQHS 431. Offered as PQHS 450 and MPHP 450.

MPHP 451. A Data-Driven Introduction to Genomics and Human Health. 3 Units.
This course introduces the foundational concepts of genomics and genetic epidemiology through four key principles: 1) Teaching students how to query relational databases using Structure Query Language (SQL); 2) Exposing students to the most current data used in genomics and bioinformatics research, providing a quantitative understanding of biological concepts; 3) Integrating newly learned concepts with prior ones to discover new relationships among biological concepts; and 4) providing historical context to how and why data were generated and stored in the way they were, and how this gave rise to modern concepts in genomics. Offered as PQHS 451, GENE 451, and MPHP 451.

MPHP 456. Health Policy and Management Decisions. 3 Units.
This seminar course combines broad health care policy issue analysis with study of the implications for specific management decisions in organizations. This course is intended as an applied, practical course where the policy context is made relevant to the individual manager. Offered as HSMC 456 and MPHP 456.

MPHP 460. Complex Systems in Health and Healthcare: Why is Obesity a Complex Problem, not Complicated. 3 Units.
This interdisciplinary seminar is designed for graduate students in public health, medicine, nursing, management, and any social science discipline. (Others accepted at the discretion of the instructors.) The course is designed to explore the nature of complex systems and how the principles of complex systems apply to health and health care from the micro- to the macro-level.

MPHP 464. Obesity and Cancer: Views from Molecules to Health Policy. 3 Units.
This course will provide an overview of the components of energy balance (diet, physical activity, resting metabolic rate, dietary induced thermogenesis) and obesity, a consequence of long term positive energy balance, and various types of cancer. Following an overview of energy balance and epidemiological evidence for the obesity epidemic, the course will proceed with an introduction to the cellular and molecular biology of energy metabolism. Then, emerging research on biologically plausible connections and epidemiological associations between obesity and various types of cancer (e.g., colon, breast) will be presented. Finally, interventions targeted at decreasing obesity and improving quality of life in cancer patients will be discussed. The course will be cooperatively-taught by a transdisciplinary team of scientists engaged in research in energy balance and/or cancer. Didactic lectures will be combined with classroom discussion of readings. The paper assignment will involve application of course principles, lectures and readings. Offered as PQHS 464 and MPHP 464.

MPHP 466. Promoting Health AcrossBoundaries. 3 Units.
This course examines the concepts of health and boundary spanning and how the synergy of the two can produce new, effective approaches to promoting health. Students will explore and analyze examples of individuals and organizations boundary spanning for health to identify practice features affecting health, compare and contrast practices and approaches, and evaluate features and context that promote or inhibit boundary spanning and promoting health. Offered as MPHP 466, PQHS 466, SOCI 466, NURS 466 and BETH 466. Prereq: Graduate student status or instructor consent.

MPHP 467. Comparative and Cost Effectiveness Research. 1 Unit.
Comparative effectiveness research is a cornerstone of healthcare reform. It holds the promise of improved health outcomes and cost containment. This course is presented in a convenient 5-day intensive format in June. There are reading assignments due prior to the 1st session. Module A, Days 1-2: Overview of comparative effectiveness research (CER) from a wide array of perspectives: individual provider, institution, insurer, patient, government, and society. Legal, ethical and social issues, as well as implications for population and public health, including health disparities will also be a component. Module B, Day 3: Introduction to the various methods, and their strengths, weaknesses and limitations. How to read and understand CER papers. Module C, Days 4-5: Cost-Effectiveness Analysis. This will cover costing, cost analysis, clinical decision analysis, quality of life and cost-effectiveness analysis for comparing alternative health care strategies. Trial version of TreeAge software will be used to create and analyze a simple cost-effectiveness model. The full 3-credit course is for taking all 3 modules. Modules A or C can be taken alone for 1 credit. Modules A and B or Modules B and C can be taken together for a total of 2 credits. Module B cannot be taken alone. If taking for 2 or 3 credits, some combination of term paper, project and/or exam will be due 30 days later. Offered as PQHS 467 and MPHP 467.

MPHP 468. The Continual Improvement of Healthcare: An Interdisciplinary Course. 3 Units.
This course prepares students to be members of interprofessional teams to engage in the continual improvement in health care. The focus is on working together for the benefit of patients and communities to enhance quality and safety. Offered as PQHS 468, MPHP 468, and NURS 468.
MPHP 482. Qualitative and Mixed Methods in Public Health. 3 Units.
Understanding complex public health issues requires both qualitative and quantitative inquiry. The exploration of the perceptions and experiences of people is as essential as analyzing the relationships among variables. Often, the integration of the two methods is required in order to effectively address the significant health issues faced by today's society. It is the purpose of this course to facilitate a meaningful and substantive learning process around engaging in, and critically analyzing, qualitative and mixed methods research in public health. This includes gaining first-hand experience in research design and collecting, managing, analyzing, and interpreting data for the purposes of making data-driven program and policy recommendations. In addition, students will have the opportunity to engage with local professionals engaged in qualitative and mixed methods research.

MPHP 483. Introduction to Epidemiology for Public Health Practice. 3 Units.
This course introduces principles and methods of epidemiology. Epidemiology has been referred to as the core science of public health. The application of epidemiologic principles is critical to disease prevention, as well as in the development and evaluation of public policy. The course emphasizes methods (study design, measures of disease occurrence, measures of association, and causality) necessary for epidemiologic research. This course is intended for students who have a foundational knowledge of the principles of human disease and statistics. Prereq: Enrollment limited to Master of Public Health or Epidemiology & Biostatistics students.

MPHP 484. Global Health Epidemiology. 1 - 3 Units.
This course provides a rigorous problem-centered training in the epidemiology, prevention, treatment, and control of infectious diseases and, more generally, global health. This is an advanced epidemiology that embraces an active learning environment. Students are expected to invest time out of the classroom reading and working with classmates. Classes will be conducted with discussions, debates, group projects, and group presentations. By taking this course, students will develop a framework for interpreting, assessing, and performing epidemiologic research on issues of global importance. The course will be divided into three modules: 1) Global Health Epidemiology 2) Helminth Epidemiology, and 3) Epidemiology of Disease Elimination. Each module is worth 1 credit hour and may be taken separately. Each module will have a separate project and/or exam. The final exam time will be used for group presentations and panel discussion. Active class participation is required through discussions, case studies, and group projects. Offered as PQHS 484, INTH 484, and MPHP 484.

MPHP 485. Adolescent Development. 3 Units.
Adolescent Development can be viewed as the overriding framework for approaching disease prevention and health promotion for this age group. This course will review the developmental tasks of adolescence and identify the impact of adolescent development on youth risk behaviors. It will build a conceptual and theoretical framework through which to address and change adolescent behavior to promote health.

MPHP 489. Women's Public Health. 3 Units.
This course aims to cover local and global issues as they pertain to women. Many major issues of global health concern will be addressed, including the health-damaging effects of poverty, racism, patriarchy, and inhumane conditions of life and labor in many countries; men's and women's sexuality in the era of HIV/AIDS; the politics of epidemic disease control and other disasters, and the role of communities, nation-states, and international organizations in responding to such crises; issues of coercion in population control and the quest for reproductive rights; and how child health is ultimately dependent on the health and well-being of mothers. The underlying purpose of the course is to develop students' awareness of the political, socioeconomic, ecological, and cultural complexity of most health problems in resource-constrained and resource-rich nations and the consequent need for cultural sensitivity, contextualization, and activist involvement in the field of global health.

MPHP 490. Epidemiology: Introduction to Theory and Methods. 3 Units.
This course provides an introduction to the principles of epidemiology covering the basic methods necessary for population and clinic-based research. Students will be introduced to epidemiologic study designs, measures of disease occurrence, measures of risk estimation, and casual inference (bias, confounding, and interaction) with application of these principles to specific fields of epidemiology. Classes will be a combination of lectures, discussion, and in-class exercises. It is intended for students who have a basic understanding of the principals of human disease and statistics. Offered as PQHS 490 and MPHP 490. Prereq or Coreq: PQHS/EPBI 431 or Requisites Not Met permission.

MPHP 496. The Evolution of Public Health into Global Health Practice. 3 Units.
This short course will use readings and case studies to explore the motivating factors in the emergence of global health interventions over the last 200 years, with a focus on its roots in public health practice, its expanding scope in the early to mid-20th century, and the strengths and weaknesses of modern global health interventions. Readings and seminar discussions will involve consideration of the changing definitions of "public health", and of the spaces in which public health interventions are expected to occur.

MPHP 499. Independent Study. 1 - 18 Units.

MPHP 510. Health Disparities. 3 Units.
This course aims to provide theoretical and application tools for students from many disciplinary backgrounds to conduct research and develop interventions to reduce health disparities. The course will be situated contextually within the historical record of the United States, reviewing social, political, economic, cultural, legal, and ethical theories related to disparities in general, with a central focus on health disparities. Several frameworks regarding health disparities will be used for investigating and discussing the empirical evidence on disparities among other subgroups (e.g., the poor, women, uninsured, disabled, and non-English speaking populations) will also be included and discussed. Students will be expected to develop a research proposal (observational, clinical, and/or intervention) rooted in their disciplinary background that will incorporate materials from the various perspectives presented throughout the course, with the objective of developing and reinforcing a more comprehensive approach to current practices within their fields. Offered as CRSP 510, PQHS 510, MPHP 510, NURS 510, and SASS 510.

MPHP 532. Health Care Information Systems. 3 Units.
This course covers concepts, techniques and technologies for providing information systems to enhance the effectiveness and efficiency of health care organizations. Offered as HSMC 432 and MPHP 532.
MPHP 540. Operational Aspects of Global Health and Emergency Response. 3 Units.
Among professional in the medical field and the field of public health, there is a gap in knowledge, structure and research in best practices surrounding emergency response. This gap results from the limited number of training programs in the United States that focus on this very specialized field and the limited number of academic partnerships with international non-governmental organizations (NGOs). This course helps remedy this gap by introducing public health students and international emergency medicine fellows to the overall structure and operations of international humanitarian coordination systems, types of emergency response, morbidity and mortality associated with various emergencies, and the actors and institutions involved. The course highlights, through reading, workshops, and examples, the real world issues that must be faced and overcome in the field during emergency response operations.

MPHP 650. Public Health Practicum. 1 - 3 Units.
The Public Health Practicum is an integral component of the MPH curriculum, allowing students to apply, develop, and refine their conceptual knowledge and skills as part of a planned, supervised, and evaluated community-based experience. The Practicum is designed to move students beyond the walls of academia, to understand the political, economic, social, and organizational contexts within which public health activities are conducted. To complete the Practicum, students must complete three credits of MPHP 650, dedicating at least 120 hours to a substantial public health experience, and attend Community Health Research and Practice (CHRP) group meetings. Prereq: Complete at least 9 credit hours in the MPH program and be in good academic standing.

MPHP 652. Public Health Capstone Experience. 1 - 9 Units.
Public health field practicum, involving a placement at a community-based field site, and a Master's essay. The field placement will provide students with the opportunity to apply knowledge and skills acquired through their Master of Public Health academic program to a problem involving the health of the community. Students will learn to communicate with target groups in an effective manner; to identify ethical, social, and cultural issues relating to public health policies, research, and interventions; to identify the process by which decisions are made within the agency or organization; and to identify and coordinate use of resources at the placement site. The Master's essay represents the culminating experience required for the degree program and may take the form of a research thesis, an evaluation study, or an intervention study. Each student is required to formally present the experience and research findings. In any semester in which a student is registered for MPHP 652 credit, it is required that the student attend the Community Health Research and Practice (CHRP) group at a minimum of two sessions per 3 credits. CHRP is held once a week for approximately an hour and a half for the duration of fall, spring, and summer semesters. MPHP 652 credit is available only to Master of Public Health students.

MPHP 653. Public Health Capstone Experience. 1 - 6 Units.
The Public Health Capstone is a multi-semester project intended to provide students with the opportunity to develop a broad understanding of their chosen topic area, the ability to communicate effectively with target groups and professionals, and develop skills necessary for scientific investigation. The Public Health Capstone provides students with the opportunity to apply the knowledge and skills acquired through their Master of Public Health academic program to a problem involving the health of the community. Students work in conjunction with a community organization; therefore, the Capstone is expected to be mutually beneficial to both the student's educational goals as well as the host organization. At the conclusion of the Capstone experience, students are required to submit a capstone essay, which represents the culminating experience required for the degree program and may take the form of a research thesis, an evaluation study, or an intervention study. Each student is required to formally present the experience and research findings. While engaged in the Public Health Capstone, students are expected to attend the Community Health Research and Practice (CHRP) seminar, held weekly on Tuesdays at 12:00pm. Counts as a SAGES Senior Capstone course.

MPHP 655. Dual Degree Field Practicum II. 3 Units.
This course is designed to be taken by MSSA/MPH joint degree students as the second field period of their master's program. It consists of a field practicum and participation in professional development opportunities. The Field Practicum is an integral component of the MSASS and MPH curriculums, allowing students to apply, develop, and refine their conceptual knowledge and skills as part of a planned, supervised, and evaluated community-based experience. The Practicum is designed to move students beyond the walls of academia, to understand the political, economic, social, and organizational contexts within which social work and public health activities are conducted. These collective experiences provide students with a forum to develop skills, integrate and operationalize the values and ethics inherent in professional practice, and confront social injustice as self-reflective, competent developing practitioners. (EPAAS Program Objective M6 and EPAAS Content Area 4.7) The overall goal of this course is to provide graduate level MSSA/MPH joint degree students with field related opportunities to continue to develop foundation level competencies in the eight MSSAS abilities by helping students apply knowledge of social work and public health theory, skills, values and ethics acquired in the classroom in an agency setting. Offered as MPHP 655 and SASS 655.
**MPHP 656. Dual Degree Field Capstone III. 3 Units.**
The Public Health Capstone Project is an integral component of the MPH curriculum, allowing students to apply, develop, and refine their conceptual knowledge and skills as part of a planned, mentored, and evaluated public health scholarly project. This course is designed to be taken by advanced level students. It consists of a 288 hour field based Capstone experience and participation in 12 hours of professional development opportunities. The overall goal of this course is designed to move students beyond the walls and constraints of the classroom, to understand the political, economic, social, and organizational contexts within which public health and social work activities are conducted. It is also designed to provide graduate level dual degree students with field related opportunities to begin to develop advanced level competencies in the eight abilities by helping students apply knowledge of social work theory, skills, values and ethics acquired in the classroom in an agency setting. These collective experiences provide students with a forum to continue to develop and hone social work skills, integrate and operationalize the values and ethics inherent in professional practice, and confront social injustice as self-reflective, competent developing practitioners. (EPAS Program Objective M6 and EPAS Content Area 4.7) Offered as SASS 656 and MPHP 656. Prereq: MPHP 655.

**MPHP 657. Dual Degree Field Capstone IV. 3 Units.**
The Public Health Capstone Project is an integral component of the MPH curriculum, allowing students to apply, develop, and refine their conceptual knowledge and skills as part of a planned, mentored, and evaluated public health scholarly project. This course is designed to be taken by advanced level students. It consists of a 288 hour field based Capstone experience and participation in 12 hours of professional development opportunities. The overall goal of this course is designed to move students beyond the walls and constraints of the classroom, to understand the political, economic, social, and organizational contexts within which public health and social work activities are conducted. It is also designed to provide graduate level dual degree students with field related opportunities to begin to develop advanced level competencies in the eight abilities by helping students apply knowledge of social work theory, skills, values and ethics acquired in the classroom in an agency setting. Offered as MPHP 657 and SASS 657.