

**REPUBLIC OF UZBEKISTAN**  
**MINISTRY OF HIGHER EDUCATION, SCIENCE AND INNOVATIONS**  
**FERGANA STATE TECHNICAL UNIVERSITY**

**Heat , gas supply and ventilation basics**  
**MODULE HANDBOOK**

|                     |                                             |
|---------------------|---------------------------------------------|
| Field of Knowledge: | 700000 – Manufacturing and technical sector |
| Field of Education: | 7 3 0000 – Architecture and Construction    |
| Education program:  | 60730300 - Civil Engineering                |

|                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Module title                                                     | <b>Heat , gas supply and ventilation basics</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Code (if available)                                              | HGSVT56                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Semester(s) of module teaching                                   | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Responsible for the module                                       | Usmanova Nodirakhan Akramovna , Engineering communications construction Department , PhD, Associate Professor<br>Abdujalilova Poet Saminjonovna , Engineering communications construction department , assistant                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Language of instruction                                          | Uzbek                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Connection to the curriculum                                     | Elective                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Teaching methods                                                 | lecture , practical training , independent education .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Study load (including classroom and independent study hours)     | Total time : 1 8 0 hours<br>Auditorium hours : 72 hour<br>Lecture – 30 hours , practical training – 4 2 hours , independent education 108 hour .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Credit units                                                     | <b>6</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Required and recommended prior knowledge for studying the module | Physics , Higher Mathematics , Heat technique                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Module objectives/intended learning outcomes                     | <p><b>The purpose of the module:</b> To form and develop students' thinking in studying the rules for installing engineering equipment in buildings, the basics of design, and their application in production, to teach them to clearly state their opinions and conclusions in a well-founded manner, and to form skills and qualifications based on the knowledge acquired.</p> <p>To achieve the above goal, science students need to acquire theoretical knowledge, practical skills , and the ability to design buildings. engineering It also performs the tasks of forming a methodological approach and scientific worldview in systems .</p> <p>The following requirements are imposed on the knowledge, skills and qualifications of students in the subject .</p> <p><b>The student:</b></p> <ul style="list-style-type: none"> <li>• heating systems;</li> <li>• centralized heat supply systems;</li> <li>• buildings gas with provision networks and equipment</li> <li>• cooling, ventilation systems, equipment <b>about to the imagination has to be ;</b></li> <li>• heating equipment of the central heating system;</li> <li>• regional (zonal) water supply system;</li> <li>• Pipes and gas pipeline equipment used in gasification systems</li> <li>• Ventilation systems , types and basic technical specifications of air conditioners;</li> </ul> <p><b>knowledge necessary;</b></p> <ul style="list-style-type: none"> <li>• thermal engineering calculation of barrier structures;</li> <li>• <b>Must have the skills</b> to calculate heat loss through barrier structures ;</li> </ul> |
| Content                                                          | "Heat , gas" supply and ventilation "fundamentals of science" goal and tasks , development history and prospects .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                              | <p><i>Buildings heating system basics .</i></p> <p><i>Thermal regime of the building . Heating system accounting power to determine .</i></p> <p><i>Barrier of constructions heat technical calculation. Through the floor in buildings heat the disappearance calculation. Through the ceiling in buildings heat the disappearance calculation</i></p> <p><i>Heating system classification .</i></p> <p><i>Classification of heating devices .</i></p> <p><i>Heating tools choice and placement .</i></p> <p><i>Heating systems heat conductivity. Heating of the instrument heat transmission coefficient to determine .</i></p> <p><i>Heating tool heat of the flow density . Heating of the instrument heat account</i></p> <p><i>Heating in the system pipe and fittings</i></p> <p><i>Heating system hydraulic account</i></p> <p><i>Centralized heat supply system structure</i></p> <p><i>Building gas with provision foundations. Building gas supply system design. Gas spending to determine .</i></p> <p><i>Building ventilation system cooling and ventilation basics. To the room detachable harms amount to understand</i></p> <p><i>In the room air exchange amount determination. Natural ventilation system design .</i></p> |
| <b>Forms of assessment</b>                   | <p><i>oral, presentation, written work, practical assignments, laboratory work, and final exams.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Requirements for study and assessment</b> | <p><i>To successfully complete the module, the student must attend classes and achieve the minimum scores set in the current, midterm, and final assessments.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Bibliography</b>                          | <ol style="list-style-type: none"> <li><i>1. Rashidov Yu.K. «Issiqlik, gaz ta'minoti va ventilyatsiya» darslik, Toshkent. «Cho'lpon» 2010 y, 143 b.</i></li> <li><i>2. Rashidov Yu.K., Saidova D.Z. "Issiqlik, gaz ta'minoti va ventilyatsiya" o'quv qo'llanma. Toshkent, TAQI 2002 y. 146 b.</i></li> <li><i>3. "Isitish" Boboev S, Shukurov G, Ismanhodjaeva M "Yangi asr avlodi" 2008 y, 298 b</i></li> <li><i>4. Ионин А.А. и др. Теплоснабжение. Транспортная компания, 2016, -336 стр.</i></li> <li><i>5. Варфоломеев Ю.М. и др., Отопление и тепловые сети. Инфра-М 2018, -480 стр</i></li> <li><i>6. Краснов В.И. Справочник монтажника водяных тепловых сетей.-Инфра -М. 2016,-334стр.</i></li> <li><i>7. С.В. Фокин, О.Н.Шпортко "Системы отопления, вентиляции и кондиционирования зданий: устройство, монтаж и эксплуатация". Москва, КНОРУС – 2019 г</i></li> <li><i>8. QMK 2.04.05-97*. Isitish, ventilyatsiya va konditsiyalash. O'zbekiston Respublikasi Davlat Arxitektura va Qurilish Qo'mitasi. Tashkent 2011 y.</i></li> </ol>                                                                                                                                                                                             |
| <b>Reviewers</b>                             | <p><i>G'. I. Mamatisayev - Fergana state technique University , Department of " Construction of Engineering Communications " department associate professor (PhD);</i></p> <p><i>N.A. Usmanova - Fergana state technique University , Department of " Construction of Engineering Communications " associate professor (PhD);</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |